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THE
ANALOGY
OF
REVELATION AND SCIENCE

ESTABLISHED

IN

A SERIES OF LECTURES

DELIVERED BEFORE

THE UNIVERSITY OF OXFORD,

IN THE YEAR MDCCCXXXIII.

ON

THE FOUNDATION OF THE LATE REV. JOHN BAMPTON, M.A.) Lec-
CANON OF SALISBURY. 18

BY

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1883

E X T R A C T
FROM
THE LAST WILL AND TESTAMENT
OF THE
REV. JOHN BAMPTON,
CANON OF SALISBURY.

— “ I give and bequeath my Lands and Estates to
“ the Chancellor, Masters, and Scholars of the University
“ of Oxford for ever, to have and to hold all and sin-
“ gular the said Lands or Estates upon trust, and to the
“ intents and purposes hereinafter mentioned; that is to
“ say, I will and appoint that the Vice-Chancellor of the
“ University of Oxford for the time being shall take and
“ receive all the rents, issues, and profits thereof, and
“ (after all taxes, reparations, and necessary deductions
“ made) that he pay all the remainder to the endowment
“ of eight Divinity Lecture Sermons, to be established for
“ ever in the said University, and to be performed in the
“ manner following:

“ I direct and appoint, that, upon the first Tuesday in
“ Easter Term, a Lecturer be yearly chosen by the Heads
“ of Colleges only, and by no others, in the room adjoin-
“ ing to the Printing-House, between the hours of ten in
“ the morning and two in the afternoon, to preach eight
“ Divinity Lecture Sermons, the year following, at St.
“ Mary’s in Oxford, between the commencement of the
“ last month in Lent Term, and the end of the third week
“ in Act Term.

“ Also I direct and appoint, that the eight Divinity
 “ Lecture Sermons shall be preached upon either of the
 “ following Subjects—to confirm and establish the Chris-
 “ tian Faith, and to confute all heretics and schismatics
 “ —upon the divine authority of the holy Scriptures—
 “ upon the authority of the writings of the primitive Fa-
 “ thers, as to the faith and practice of the primitive Church
 “ —upon the Divinity of our Lord and Saviour Jesus
 “ Christ—upon the Divinity of the Holy Ghost—upon the
 “ Articles of the Christian Faith, as comprehended in the
 “ Apostles’ and Nicene Creeds.

“ Also I direct, that thirty copies of the eight Divinity
 “ Lecture Sermons shall be always printed, within two
 “ months after they are preached, and one copy shall be
 “ given to the Chancellor of the University, and one copy
 “ to the Head of every College, and one copy to the Mayor
 “ of the city of Oxford, and one copy to be put into the
 “ Bodleian Library; and the expense of printing them shall
 “ be paid out of the revenue of the Land or Estates given
 “ for establishing the Divinity Lecture Sermons; and the
 “ Preacher shall not be paid, nor be entitled to the revenue,
 “ before they are printed.

“ Also I direct and appoint, that no person shall be
 “ qualified to preach the Divinity Lecture Sermons, un-
 “ less he hath taken the degree of Master of Arts at least,
 “ in one of the two Universities of Oxford or Cambridge;
 “ and that the same person shall never preach the Divinity
 “ Lecture Sermons twice.”

P R E F A C E.



IN submitting the subjoined disquisitions to the ordeal of public opinion, the author, in times less portentous, would have left his views to explain themselves in the regular course of discussion. In the nature and extent of his inquiries he would have found sufficient grounds for concluding, that his objects neither required illustration nor needed apology. But in obeying the commanding motives, which have impelled him to enter a field, atonce new and extensive, and in which he acknowledges his inquiries have been desultory, and his experience is limited ; he has been led to express his opinions with a freedom, which may be thought to demand explanation ; and has been drawn into a course of investigation, to which it seems not premature to bespeak a patient attention.

In entering on the subject of his defence, he cannot but think, that, had his expressions far exceeded the license which he has assumed, they would find in the enormities by which they were provoked the amplest justification. It will be more than sufficient for his vindication, to state, that when he was chosen to deliver the annexed course of lectures, productions, having for their apparent object

the diffusion of Science, but possessing a tendency hostile to Revelation, were disseminated, in London alone, to the enormous weekly amount of three hundred thousand ^a. Productions of this description it is obvious, must owe their existence to persons of some literary pretensions, and their dispersion to others possessed of considerable pecuniary resources. The scepticism must be therefore invincible or affected, which resists the evidence that they afford of an organized conspiracy in active operation for the subversion of all religion. That such is the object of their exertions, the more daring and determined of the accomplices in the work of infamy are forward to declare. By its more dangerous, as its more insidious enemies, a different plan of attack is pursued. As an open assault upon its bulwarks would awaken the vigilance and arouse the opposition of its natural defenders ; a mine is laid for sapping the foundation. That care which has been wisely and beneficently directed to fit Revelation to the general comprehension of mankind, by adapting it to the level of meaner capacities, is converted into a proof of fallibility and error. No defects are indeed pointed out, nor even insinuated ; but the organs of the ordinary observer are disciplined for their detection. To their vision, when exercised in the use and aided by the powers of the magnifier,

^a Report of Society for Promoting Christian Knowledge, for 1832.

their imperfections, which are but intentional and assumed, appear atonce real and distorted.

In reverting, from the agents in this conspiracy, to the members of the associations, British and Foreign, who are so far identified with them, as pursuing a common object in the promotion of science; the author deprecates all design to insinuate, that they are atall involved in the same infamous proceedings. But it would be treachery to the cause, in which he is embarked, to disclaim all apprehension, that however harmless in their intention, they may not prove dangerous in their consequences. However free, at present, from infection, they are not possessed of a charm which renders them proof against contagion. The foreign coalitions, after the model of which they are formed, with which they have declared their ambition to cultivate the closest alliance, and with which their advances preserve a common movement, have betrayed no friendly spirit to Revelation; for the extension of which some ground of apprehension may be found in the aspect of the present times, particularly as the constitution of our native association affords no guarantee against its introduction. Little respect, it may be admitted, is due to the vague reports which have been indulged, that the designs of this vast coalition, the anniversaries of which are now duly celebrated, in France, Germany, and England, however unsuspected among us, are no mystery among our continental neigh-

bours. The suspicions formed of their object may be as groundless, as their labors are likely to prove abortive ;—that the end which is secretly sought in this general organisation, is the establishment of the ascendancy of philosophy on the ruins of religion ; and that a transfer is silently projected of the influence which the ecclesiastical body have so long exercised over the human mind, to the scientific, whose superior lights and higher attainments confer the only legitimate claim to a supremacy in opinion. These and similar suspicions may be as little entitled to credit as the promise held forth by these projectors, that by the silent but certain effect of these operations, the triumphs of philosophy will be secured, without the risk or expense of a contest, in the gradual decay of superstition, as the mists of error must pass away, when the light of truth receives a wider diffusion. But whether these surmises be regarded as idle speculation or grave reality, the influence, which a movement so extensive is calculated to exert on the frame of society, cannot be matter of trivial import to the philosopher or the divine. Where the cultivation of science is pursued as an exclusive object ; it is in vain to deny, that the proscription of religion is tacitly acknowledged. While these early rivals are admitted to contain in common much debatable ground, in which there is not merely room for a diversity but an opposition of opinion ; it is absurd to argue, that their interests

may be severally promoted without any detriment to either. And as a wayward disposition has manifested itself to treat the discrepancies by which they are apparently separated, as that species of opposition which cannot subsist between truth confronted with truth ; and to taunt the advocates of the scriptural views, when opposed to the scientific, with a repugnancy to place their cause at the hazard of impartial discussion ; that some serious apprehension should be felt, at the strength which is combined in so vast and powerful a coalition, cannot be imputed, with justice, to an unworthy and groundless suspicion.

That, with the light that these combined operations are intended to diffuse, a general scepticism will be disseminated, might be inferred, from the steadiness of the laws, by which known causes produce their effects, were it not apparent in the open profession of infidelity, in which the young and unabashed scoffer affects to emulate the aged and hardened free-thinker. And but one course appears to be open to him who would lend his assistance, in opposing a barrier to the torrent, in which our best interests are likely to be involved. While the praise of meritorious intention is conceded to the methods which have been employed to arrest its progress ; it cannot be in candor allowed, that they are calculated to attain their purpose. The means which have been used, to instil sounder principles, by the

diffusion of productions of a cheap form and popular character, however wisely adapted to the attainment of positive good, must be wholly inefficacious in stemming the tide of evil. While the inexperienced are liable to be drawn on the rock or quicksand by illusory lights, it is not sufficient for their protection, that a beacon be set up to warn or direct them : their security can be only ensured, by supplying a chart for their guidance, in which the safe course is laid down, and the reefs and shallows are depicted. On the field, where weeds have shed their seeds, and extended their roots, the labor must be misapplied, which is employed in inverting the soil and scattering the grain ; though the heaven dispense its sunshine and showers, the noxious crop must be rooted up, or it will inevitably disappoint the golden promise of harvest.

In taking upon himself the office of correcting or obviating these evils, the author, while he feels the obligation to be imperative, that some effort should be made for the defence of the inspired Records, is not unconscious that the task is no less difficult than delicate. In the opposition which has been sedulously traced between revealed and physical truth, the moral evidence on which the one rests can have little weight, when counterbalanced by the demonstrative, by which the other is established. While science was cultivated merely as hypothesis, the great latitude allowed for diversity of opinion placed

the philosophy of scripture within the verge, if not of vindication, of apology. But since it has been fixed on the solid basis of experiment, truths have been brought to light, which, however apparently opposed to the scripture philosophy, it would be vain to dispute, are now determined beyond reasonable objection. Nor is it sufficient for its defence, that its representations may in the estimation of some of its advocates, be divested of the nature of fact; and supposed to be endowed with a merely figurative reality, which may be accommodated by explanation to any philosophical system^b. With as little prospect of success is the plea of error admitted, and a palliation deduced, for the misrepresentation of facts from the distinction which is made between doctrine and science^c, or the line which may be drawn between the certainty of a revelation and the accuracy of its historians^d. In these concessions, the imputation of weakness is admitted, which is as little consistent with the infallibility that is inseparable from inspiration, as reconcilable with the integrity which is necessary to an unerring rule of opinion and practice. Where matter of fact is exhibited in a point of view contrary to that which philosophy professes to establish by a rigid

^b Vid. Burnet Archæol. lib. ii. cap. ix. p. 430. sq.

^c Derham, Astro-theolog. Introd. p. xx.

^d Jenyns, View of the Evidence of Christian Religion, p. 123.

method of proof; if the contradiction cannot be cleared up, the mind must pass, from doubt, in the necessary process of conviction, into scepticism and infidelity.

If we, therefore, intend, that religion should continue to maintain its sway, some effort must be made to conciliate those interests, which cannot remain opposed, without endangering its very existence. Where Science is observed to assume an aspect hostile to Revelation; if we cannot strengthen ourselves by its alliance, we must atleast endeavour to render it neutral. If this object be not attainable, it can be scarcely matter of doubt, that as the claims of Science advance, the interests of morality will decline, with the decay of Religion. To assist in obviating this deplorable result, the author, though labouring under many unforeseen disadvantages, arising from his absence from the sources of inquiry, has employed his best exertions: with what effect is necessarily submitted to the candor of the reader. But in the arduous undertaking wherein he has engaged, as some difficulty has arisen in the distribution of his subject, which may be likely to produce an unfavourable impression against his work; he may be allowed to offer a few cursory remarks, on the scope and order observed in a discussion, which afforded no obvious or natural principle of connexion.

Of the contrasted subjects which he has labored

to reconcile, either Revelation or Science, between which he has undertaken to trace the analogy, might have supplied him with a principle of arrangement. The character of the Lectures, however, in which his views were to be explained, and the place from whence they were delivered, necessarily decided his choice; and thus determined him to shape his course, by the line which has been prescribed in the scriptures. Of Revelation it has been justly observed, that it properly consists in a history of God's dealings with mankind^e; according to the order in which the events recorded in it are detailed, the distribution of the subject has been consequently effected. After the introductory Lecture, in which it is opened, and the principles, on which the investigation is conducted, are explained; the discussion is prosecuted according to the order observed in detailing the incidents of the sacred history, of which the Creation and Deluge are the most prominent. Occasion is accordingly taken to pursue the investigation through the different sciences, to which there is any allusion in scripture. In this manner all that is recorded of the planetary system,—of the earth, its formation, and submersion in a deluge,—of the method in which it has been supplied with living creatures,—and particularly of the nature and destination of man, to whose dominion it has been committed—is discussed in order.

^e Butler, *Analog.* par. ii. ch. vii. p. 277.

In the course of the subjects, thus investigated, the philosophy of the scriptures is fully examined; and the common objections arising from the existing state of astronomy, geology, physiology, psychology, philology, &c. specifically answered.

In taking a range thus wide, not a little inconvenience has been felt by the author, from the limits prescribed to his discussion, not less by the number of the lectures which he was required to deliver, than by their extent. He has been thus compelled to compress within the space of a single discourse, that matter which would have required several, to do it ample justice. For the fuller explanation and establishment of his views, he has consequently found it expedient to subjoin to his work an appendix of notes. In the mass of invaluable matter which is there deduced from the most highly reputed authorities in science and philosophy, a body of the most curious information will be found, which would be sufficient to redeem the credit of any work, however destitute of original merit. So deep and extensive are his obligations to one or two writers of the highest repute, in a few sciences of great importance and interest, that it would be an act of the grossest injustice to pass them over without a specific acknowledgment. The debt which he has thus contracted to Drs. Prichard and Fodéré, and Mr. Greenough, by whose learned labors his toils have been abridged and lightened, cannot, he is conscious,

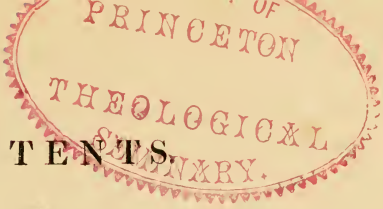
be repaid by any acknowledgment. In the division of the labor, in which they have been engaged, his has been the lighter and more grateful occupation. In pursuing their common inquiries after truth to the source, theirs has been the task to sink the well and discover the spring, his the office to investigate and ascertain its healing virtues. The structures which their care has raised and dedicated to the uses of Science, it has been his part to consecrate to the solemn purposes of Religion.

Against the charge of imperfection and deficiency which he is sensible may be objected to his work, while he admits that apology is vain and unavailing, he believes the difficulties and discouragements with which he has had to contend will afford some palliation. When he first conceived the idea of engaging in so arduous a task, he had hopes, by the exchange of his benefice, to surmount one obstacle, by which he found his ardor checked and his progress impeded ; as he might be thus brought within that distance of a public library, which would render its stores available to his researches. He would willingly believe, that the disappointment which he has suffered, in the failure of this purpose, has not been intentional ; although his worst suspicions that it has been designed, find some justification, in the system of petty annoyance to which he has been subsequently exposed ; and which, by disturbing the quiet necessary to the prosecution of subjects that

required an absorbed attention, contributed to cramp his powers and obstruct his advances. Had he not found himself unexpectedly frustrated in this project—the failure of which, if it could have been foreseen, would have determined him, from the first, to abandon his undertaking,—he is sanguine enough to believe his success would have been less precarious, if not positively certain. While he was thus left dependant upon his own resources, the opportunities allowed him for the consultation of authorities have been nearly limited to the time, during which his Lectures were in the course of delivery. This short period he has been, however, enabled to turn to the best account, from the numerous facilities afforded to inquiry in the library of the University. For the great kindness and attention, which he there experienced, he is sensible he offers but an inadequate return, in this public expression of his gratitude.

But whatever be the extent of the success, whatever the nature of the reception, with which his labors are destined to be attended, he thinks he may calculate on one beneficial result, as likely to follow from the experiment which he has hazarded. The degree of success which he has attained is at least sufficient to prove that the cause in which he has labored possesses such inherent strength, as to need but an adequate defender to secure its ultimate triumph. And although he must feel that his

labors have been aggravated, to a degree which is unprecedented in his professional career, by the discouragements and annoyances with which he has had to contend; he cannot complain, that while he was engaged in carrying them into effect, they have been without alleviation or requital. Not a little of the gratification which he experiences, in beholding the completion of his task, results from the conscious pride, that his exertions have risen superior to the obstructions, by which they have been naturally beset or unworthily impeded. Of the inward gratulation, which arises from the sense of difficulty surmounted in the discharge of a sacred duty, he has not been unconscious; and of the intense gratification, which springs from engagement in the highest intellectual pursuit, he has been rarely insensible. He will even admit, that from the obscurity of the state in which his labors have been prosecuted, he has derived some advantage: while withdrawn from the scene of low intrigue and grovelling ambition, he has been so far allowed more leisure and quiet for his favorite works: “*quæ nec in strepitu, nec sedente ante ostium litigatore, nec inter sordes et lacrymas reorum componuntur: sed secedit animus in loca pura atque innocentia, frui- turque sedibus sacris.*”



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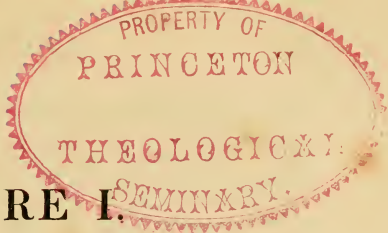
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LECTURE I.

1 TIM. VI. 20, 21.

—keep that which is committed to thy trust, avoiding profane and vain babblings, and oppositions of science falsely so called: which some professing have erred from the faith.

THE inquirers after philosophic truth have occasionally endeavoured to recommend their favorite pursuit; as tending to enlarge the store and elevate the tone of our religious knowledge. Nor can the claims, which have been frequently urged by them with force and eloquence, be fairly disallowed. By the constant survey of the objects of Nature, in which the scientific are engaged; by the patient investigation of the laws by which its operations are conducted, our conceptions must be enlarged and our admiration heightened, of the power and wisdom, by which the system has been contrived. The examination of every wheel and movement brings inexhaustible evidence of those attributes of the Almighty Intellect, by which the divine mechanism has been planned and executed. Every object in the living multitudes, with which the animal

and vegetable realms are stored, brings confirmation of the pious ejaculation ;—" O Lord, " how manifold are thy works, in wisdom hast " thou made them all : the earth is full of thy " riches !"

But unfortunately, after the brief tribute which may be offered by the philosophic inquirer, and which is paid rather to Natural than to Revealed Religion, the divine operations and providence seem entitled to but a small share of his regard. In the ardor of his researches into Nature and her secrets, God and the mysteries of his providence, if deemed worthy of consideration, are treated with a cold and momentary respect. In tracing effects to their origin, while the Great First Cause is wholly disregarded ; those causes which are secondary are alone thought deserving of inquiry. Instead of the properties of the divine Mind, which gave existence to the universe, and which the order and harmony of nature every where attest ; the qualities of passive *matter*, and the mechanical principles to which it is subjected, engross his undivided attention. To subject the entire system of nature to physical laws, to deduce not only its order but its origin from those principles, is indeed the highest object of his ambition, the proudest evidence of success in his inquiries. His *labors*, consequently, whatever be his professions, instead of

contributing to establish even the fundamental tenet of the Deist, tend virtually to confirm the first principles, from which the Atheist derives a creed as revolting to the heart, as it is repugnant to reason.

It has been found, by sad experience, that from no quarter has Revelation suffered so deeply in its credit, as from opposing Science. The inspired narrative, in the detail of ordinary events, bears impressed upon it the stamp of unimpeachable veracity. But in touching upon subjects relating to science, its descriptions, as accommodated to the obvious appearance of things, maintain but little regard to philosophical precision, in the advanced state of our present knowledge. The charge or suspicion of error being thus incurred by the sacred record; the claim which it lays to infallibility must be proportionably shaken. The broad line, by which truth and error are separated, thus becoming in some measure obliterated; the confidence necessarily fails which we repose in the guide, that had been chosen as our unerring director. All that bears the air of the marvellous, in its deviation from natural truth, is necessarily opposed to science; and, when estimated by this standard, incurs the imputation of error. As the inspired record derives chiefly, if not exclusively, from the marvellous, the proof of its divine original; when that cha-

racter is impeached or forfeited, the authority is undermined, which qualifies it to become the undeviating rule of our opinions and practice.

It can be scarcely necessary to push our observations, from these pernicious principles to the practical evils to which they progressively lead : or to point out, by how easy and regular a descent, the path is smoothed from scepticism to open immorality. The last age which vaunted itself in its superior philosophical light, which employed its most strenuous efforts to subvert all religion, by demonstrating its irreconcilable opposition to scientific truth, gave full proof of the corrupt fruits, of which a soil so noxious is naturally productive. The last consequence of these endeavours, as a neighbouring nation, not long since, learned to their misfortune, was not merely to loosen the obligations, but to sever the moral ties, by which the social and domestic interests of humanity are preserved from dissolution. Their avowed object was to strip Revelation not only of its highest truths, but to despoil it of its divine authority ; to hold it up to the contempt and execration of the multitude, as a scheme of imposture fitted only for the superstitious and hypocritical. They labored, not without effect, to supersede it by a philosophical system, better suited in their views, to the reason and happiness of mankind ; and of the moral tendencies of which an estimate may

be readily formed, as it left them unfettered in their choice, between a stoical mortification on the one hand, and an epicurean licentiousness on the other.

I. It is not therefore without adequate reason, that the Apostle raises his monitory voice against “the opposition of Science, falsely so called,” as calculated to seduce those from the Faith, who incautiously yielded to its suggestions. In the injunction in which the warning is conveyed, the obligation is enforced, that we should guard the divine deposit, “which has been committed “to us,” against innovation. But we can scarcely acquit ourselves, as becomes the guardians of so sacred a trust, without fully ascertaining the nature of the danger with which it is menaced. Whatever be the differences by which Revelation and Science are opposed to each other, they can admit of no satisfactory adjustment, until a right estimate be attained of the evidence by which our assent, on either side, should be influenced. If the methods of reasoning employed by the advocate of religion, appear unwarrantable to the objector, in resting in some degree on preternatural intervention; the modes of proof adduced by the disciples of science appear no less insufficient to us, in admitting the operation merely of natural agency. To that system of argument, we have a right to object, as violating the analogy of reason, not less than of faith; as

equally opposed to sound philosophy and religion; in which secondary causes are taken into account, to the exclusion of a primary. On the contrary, we maintain, that without the admission of a Great First Cause, the mighty fabric of his Science, whether truly or “falsely so called,” must be baseless and hollow: and that such agency being once acknowledged, the bulwarks of our Faith stand impreguably fixed, against his opposition, however uncompromising and determined. Let him but relinquish this ground, which is the foundation alike of religious and philosophical truth, of Revelation and Science; and the dream that last occupied his sleeping or waking thoughts, is not less qualified to bear the test of truth; or the bubble that he inflated in his last experiment, to resist the touch; than the system of his philosophy is competent to stand the scrutiny of reason.

The immortal founders of the experimental philosophy have not been backward to acknowledge the force of this fundamental position of natural religion and philosophy. The method of deduction which they pursued soon led them to perceive, that unless the existence of a Primary Agent were acknowledged, the chain of causes and effects, by which their reasoning is connected, must have fallen to the ground, as having no loop to support it. Whatever be the philosopher's success in explaining every object

and operation of nature by referring it to some high principle and general law; while he admits so much as the existence of matter and motion; in accounting for it he must have recourse to a Primary Mover, for the first impulse in which it commenced, or his explanation must be irrational, or incomprehensible. With all due reverence, be it observed, to the omniscience of our times,—there are secrets in the organisation of the body, without insisting on the mysteries of the mind, of which not a rational conjecture can be formed; and for the existence of which no cause can be assigned, if recourse be not had to an agency, superior to the ordinary operations of nature. Though our inquiries into Nature and her operations be conducted, where the ground is sure, and the path unobstructed, there is a limit set to our advances, which we cannot transgress, without entering into the presence of the Infinite and Inscrutable: a veil is spread before the sense, behind which, our reason assures us the omnipotent hand must be at work, although, the Divine Agent withdraws himself from our immediate perception.

Nor can it be replied, that this objection is applicable only to a period immeasurably remote, when the universal machine was first put in motion, and those laws assigned their operation, by which the system of nature has been

governed from that time to the present. If we suppose any controversy to be mooted; as it must lie between the defender of Religion on the one side, and of Science on the other; it must necessarily extend to the time in which the earth was produced at the Creation, and has been renovated after the Deluge: for, the occurrence and the consequences of these great events constitute no inconsiderable part of the details which we receive as revealed by God to his creatures. The advocate of Science cannot surely conceive, even for a moment, that the result of occupations, to which he annexes an importance, perhaps not undeservedly, at all enters into the great question which is at issue with the sceptic; and the decision of which, in its moral effects, not to insist on its religious tendency, is pregnant with consequences, of the highest moment to all our species. It is merely as those great events,—in which our earth was called into being, and recovered from the depths of an overwhelming ocean,—enter into the discussion, and involve in their truth, or falsehood, the general credit of Revelation; that we have between us any ground of debate, much less of disagreement. Such being the point which is really at stake, the question may be finally decided, by a consideration of the different agency by which events thus vast and unparalleled were compassed, and the operations by which nature

accomplishes those purposes with which Science is exclusively concerned.

By all that experiment has attempted, or discovery attained, a total want of analogy is established between the act of *propagation*, by which objects are produced from one another, and of *creation*, by which they are first brought into existence. It is essential to the former, to which our experience is strictly limited, that one of the same species as the object produced should pre-exist, and be capable of originating another in its likeness. It is inconsistent with every notion which we can form of the latter, to suppose, that the object formed should have been preceded and produced by an individual of the same order. Unless, therefore, the inconceivably absurd position be admitted, that all things, though subject to endless change and corruption, are self-existent and eternal, and consequently partakers of the same nature with the all-perfect immutable God; there must have been a first individual of every kind that is propagated, and its production must have taken place in a manner directly opposed to that, which we observe in nature, and must, of consequence, consider preternatural. The rejection of miraculous agency in any scheme of Science, which entrenches on the province of Revelation, must be consequently not merely contrary to the first principles of theology, but to every sound de-

duction of reason. And this objection applies to every system of philosophising, whether the chain of causation by which it is conducted, be taken back to the date of the Deluge, or, (after that event has been resolved into natural effects,) be carried beyond it, to the epoch of the Creation. That Science which makes pretensions to a range thus comprehensive, and is constructed on a narrower foundation, than that for which we claim, must be pseudonymous; and as such challenges our hostility and exposure, as contrary to the interests of truth, whether natural or revealed.

II. Another question, however, unfortunately arises out of the decision of this point; in the determination of which, those objectors are chiefly concerned, who, in the claims which they advance for Revelation, are disposed to reject altogether the pretensions of Science. As the divine influence, from what has been hitherto observed, must have interposed in producing the works of Nature; it has been maintained, that it alone was exerted at the Creation, to the exclusion of merely secondary causes. This principle, which has been employed in explanation of the Hebrew Cosmogony, has been defended no less pertinaciously against those, who, denying the necessity of recurring to the divine intervention, assert the sufficiency of natural causes; than against those, who conceive,

that the Omnipotent employed ordinary means, as well as extraordinary, in the accomplishment of his wise and providential purposes.

In the result of this question, the fate of the undertaking in which I am embarked, is in no small measure implicated. For, on the maintenance of the latter position, that natural causes were employed in subordination to the preternatural agency exerted in the Creation, it must depend, whether any ground remain for further discussion. If it be conceived, that the hand of Omnipotence, in moulding the universe into form, while it worked with miraculous power, suspended those functions, with which Nature is indued, and, according to the all-wise Disposer's purposes, accomplishes her appointed ends: as our views must under this supposition, be limited to the consideration of operations, which are mysterious and unsearchable, all inquiry into the mode of their efficiency must be not only vain, but irreverent.

The learned and excellent persons, however, who first engaged in the field, that is here opened to inquiry, were led to adopt the intermediate supposition; That ordinary means not less than extraordinary, were employed by the Creator, in the execution of his work: and perhaps, these modes of operation are, in the present instance, improperly distinguished; as they derived their existence and agency from the im-

mediate influence of God. The extremes, into which the different parties have passed who are divided on this subject, seem to recommend this ground, as the most secure, and as offering that point of view from which it must be best comprehended. As it is equally removed from the positions, taken on either side, it bears one distinctive character of truth; which delights in observing a golden mean. And if we may be allowed, in the decision of such a point, to reason from the analogy of nature and revelation; the learned and pious persons, who have chosen the present side of the question, have had ample cause for the preference which they have shewn it.

1. There is, *à priori*, no presumption deducible from reason, which makes against the supposition, that the Almighty condescended to the ordinary modes of operation, by which he maintains the system of nature, in bringing the universe into existence. As he is equally the author of the natural, as of the preternatural, if indeed with reference to him they may be distinguished;—as he employs them alike, in the modes of his providence; his power and prerogative, as the Creator and Governor of the world, are not less acknowledged, under the supposition that he acts thus indirectly, than that he immediately and personally interposes. And from the nature of the different means thus employed,

this conclusion is more fully supported. While they appear to have a common origin and design, that they are at all distinguished, with reference to ourselves, depends not on any intrinsic constitution in the agency which is exerted, but on our experience of the effect which is produced: that being regarded as corresponding with nature which we usually behold, and that considered superior to it, which falls less commonly under observation. The wonders which are discovered, in the development of vegetable and animal life, when estimated by all that human skill is able to accomplish, evince a power as plainly miraculous, as that which might be exerted, in giving to the natural law that operates so marvellously, an intenseness and activity, that would be at once regarded as preternatural. Or to place the subject in a juster light: that law, whether it be termed natural or divine, obviously exhibits in its operation, more convincing marks of preternatural agency, than in its suspension. There can be, however, no room for doubt, that, where the necessary connexion subsisted that joins cause and effect, that law would evince, in its suspension, evidence of miraculous power; how much more, then, must it exhibit it, in its operation! It may be, indeed, questioned, whether the power and wisdom of the Creator is not more apparent, in imparting to the machinery of nature a self-acting prin-

ciple, which fits it for executing his purposes, than in exerting his continued agency, in perpetuating its motion, and aiding its operations.

2. If we regard this subject, in a philosophical light,—it seems not easy even to conceive the abstraction of natural properties from the objects in which they inhere ; and admitting their inseparability, it is as difficult to conceive, how they could have been unattended with a physical effect and operation. We have the assurance of inspiration, that water, earth, and atmospheric air, were produced on the very first days of the Creation. These elements consist of ponderable matter, and are thus subject to a law of mutual attraction by which every part of nature is observed to be governed. They consist of atoms which are held in combination by an affinity, either physical or chemical, as they are of the same or of different natures. The very quantity of the different ingredients, which are thus combined, observes a law of definite proportions, from which there is no known deviation. The matter which is endued with such a nature was besides subjected to heat, at the same primeval period. And as heat is found to be an antagonist force to gravity ; ponderable matter, under its influence, became subject to new and contrary modifications ; being as disposed to separate and disperse by it, as induced to coalesce by its physical opponent. The law

of definite proportions, in the component parts of matter, supposes also the operation of electric agency ; it is atleast certain, that by a change in the electric state of those parts, their attraction may be destroyed and their positive decomposition effected. The supposition of the influence of this subtle agent upon the objects of nature, from the earliest period, is further strengthened by the relation which it is observed to bear to light and heat, that were preceded, in their production, by no created substance. Such being the natural constitution of things, and the agency by which they are governed, it seems not possible to conceive a state of nature from which either can be mentally abstracted. Let it be however supposed, for argument's sake, that the property of attraction were separated, from the component parts of which water and air consist, while that of heat remained ; we should have indeed the gases of which they are composed, but could no longer be said to have the air and water. The same observation may be nearly extended to the elements of which solid bodies are composed ; on removing the affinity between the parts of which, they would be reduced to a mere aggregation of atoms, probably of the same form and texture, but less cohesive than water. In fine, the oblate spheroidal form of the earth itself is supposed to afford a sufficient proof, that natural causes were em-

ployed in its production. It is certain, atleast, that the operation of the antagonist forces which dispose the parts of a revolving sphere, to tend to the centre by their weight, and to recede from it by their motion, would dispose it to take that form precisely, which, as appears from actual measurement, the earth possesses.

3. It may be indeed conceived, though hardly with any show of reason, that by the influence of that Almighty Power, which presided at the Creation, those bodies might have been withheld from exerting any physical force, while the plastic hand of Omnipotence moulded every object into form, and the divine afflation infused a soul and animation, into living and intelligent beings. But, in the supposition, another miracle, equivalent in its effects to a second creation, must be imagined, without any authority from the inspired word, and in direct opposition to the deductions of reason. For, to the substantiation of such a position, it is necessary to conceive the exertion of preternatural power, if not to impart to those bodies their physical properties and agency, yet to bring them into operation, after they had been thus miraculously withdrawn or suspended. But such a supposition, independent of the difficulties in which it is thus inextricably involved, is not to be easily reconciled with the time employed in perfecting the work of creation. It appears, not merely from

the cause assigned for the institution of the Sabbath, but from the express declaration of Scripture, that until the rest of the seventh day, the divine operation continued without intermission. With the exertion of omnipotence, however, the protraction of the act seems to be so little reconcilable, that an instantaneous production is admitted to be a distinctive character of such agency. Of the operations of nature, on the contrary, an essential feature is the time required for a slow and progressive production. While the six days occupied in the creation are incompatible with each of these extreme cases; they admirably accord with the mean supposition, that ordinary causes were permitted to act, though controlled and quickened by an almighty and presiding Intelligence. Each created being advanced, by a progressive development of its form and functions, to the maturity of vegetable and animal life; the germ expanded into ripe and umbrageous luxuriance; and the embryo, as it became more amplified in form, exulted in the consciousness of its growing powers.

4. The observation may be extended much further, and the analogy of the method which is observed by God, not merely in his ordinary, but his extraordinary providence, may be urged to prove, that secondary means were employed by him in the accomplishment of his designs. Next in magnitude to the Creation, with the

nature of which we are particularly concerned, the Deluge is an event, which, from its importance and consequences, presents an occasion apparently the best suited to engage the direct interposition of almighty power. But while it cannot be doubted, that the Deity was omnipotent at once to submerge the earth, and to recover it from the deep in which it was overwhelmed; it was his good pleasure to employ in its destruction and restitution, the means which were supplied by its natural constitution. He broke up the great abyss, and opened the flood-gates of heaven, and caused them to pour forth their waters; he brought a wind over the earth, which accelerated their decrease, and thus gradually drying up its surface, fitted it for the reception of the small remnant of mankind that had escaped the catastrophe. In accomplishing this end, to effect which could not have occupied above an instant, had such been the divine will, an entire year was consumed: and from the inspired narrative it appears, that the time was protracted to this length, to allow the natural causes, which cooperated in the proposed event, sufficient space for exertion. Though the work of destruction was expeditious, it was not effected out of the ordinary course of nature; as produced by one of those convulsive throes, the pangs of which, if they were not as sudden as they are violent, must

have led to her total dissolution. The work of recovery, was comparatively slow and progressive; although, it was accomplished within that stated time, and with that supernatural expedition, which proves a divine agency gave an intensity and direction to the secondary causes, that were set in operation. In fine, the analogy which may be thus traced, between the means employed in the creation and the destruction of the earth, may be nearly extended to every instance of miraculous power, in which the special providence of the Divinity has been manifested. To select a striking example;—when the multitudes who followed Moses, or attended Christ, to the wilderness, were exhausted with hunger and fatigue, He, to whom all things are possible, was surely competent to infuse into them preternatural strength and sustenance. He was, however, pleased in his wisdom to use the natural means for their support, which were supplied by the occasion. He accordingly directed flocks of quails into the camp of the Israelites, and multiplied for their immediate necessities the few loaves and fishes, which were borne by one or two individuals for their own support in the desert.

III. If we are at liberty to judge the question by the rule of analogy, we may venture to conclude, from the antecedent remarks, that the middle course is the most secure, in which it is

presumed, that the Almighty, in conducting his operations, employs ordinary means in conjunction with extraordinary. The subject being so far cleared up, the obscurity is in a great measure removed, which attends our inquiry after that point, where we must apply to preternatural means, in undertaking the solution of any difficulty that may arise, in adjusting the respective bounds of Revelation and Science. For if natural means were employed, as far as they extended; on their failure, recourse must be necessarily had to preternatural. And as the proposition equally admits of being put conversely, it may be, of course, generally laid down,—That in accounting for any event, which appears from its nature and magnitude to manifest the divine intervention; recourse should not be had to preternatural causes, until the natural prove inadequate.

On the validity of this position mainly depends the legitimacy of the greater part of the reasoning employed in the discussion in which I have engaged. So obvious and self-evident did it appear to the learned and pious persons, who first entered on the task of settling some disputed grounds in the separate provinces of reason and faith, that it was assumed as a postulate for their deductions. And however questionable it may be regarded by the divine, as narrowing the grounds of Revelation; it will be at least re-

cognised by the philosopher, as strictly according with the analogy of Science. He cannot in justice object to the rule, when applied to the ground which we hold in common, as it is framed in the spirit of two laws, which govern his own researches into the works of nature. On the presumption, that she does nothing in vain, are founded the *lex parsimoniæ* and the *principium sufficientis rationis*, of which he so often pleads the authority ; and according to which he undertakes to determine the measure of any agency she may employ in her operations. As the one precept depends on the presumption, that she exerts *as much* force as is requisite to the attainment of her ends ; the other rests on the position, that she exerts *no more* than is necessary. In the scheme of the theologian, who regards the universe as the contrivance of an all wise and powerful disposer, the force of this reasoning is not only acknowledged, but the ground of its conclusiveness disclosed. As he looks through the works of nature to the operations of God ; in his system, exclusively, is the principle carried to its utmost extent, which supposes that there is an adequacy, without any waste, of power. In presuming to trace the boundary between the ordinary and the extraordinary methods of divine providence, the test which he proposes differs in nothing essential from that, by which he considers the genuine miracles are distinguished

from the counterfeit. He thus ventures in the last place to pronounce, that in order to warrant us in conceiving the Deity at all interposes, the cause should be of sufficient importance and magnitude to require his immediate intervention.

In offering this statement, as the measure of my own views and purposes, it cannot be objected, unless by a total perversion of my meaning, that in claiming for the exertion of natural causes to such an extent, it is my purpose to assert their adequacy, to the exclusion of preternatural: from which they derived a greater intenseness and efficacy, and without which they would have been wholly insufficient to produce the end which was finally effected. But in granting, that this divine efficiency at any time conspired with the operations of nature, I would not be thought to admit, that we are warranted in supposing, it was at all exerted, unless when justified by the importance and magnitude of the occasion.

IV. The discussion into which I have entered at so great a length, will I trust now justify the conclusion, that the analogy between Science and Revelation commences from the foundation of the structure, to the support and ornament of which they mutually contribute. To their common support Faith and Reason are in fact equally necessary; although the pressure which

these pillars sustain, be in different measures, and variously distributed. They contribute alike to exemplify the dependance which all things have upon that Being, who alone is self-existent and allsufficient to his own glory and felicity; whose intervention and operations cannot be excluded from the scheme of Philosophy any more than of Religion, without rendering it, not merely imperfect but irrational. For to what higher character can that system lay claim, which, while it admits the display of order, design and wisdom, recognises no contriver; while it admits the operation of secondary causes, virtually denies the agency of the Primary? Let this Being, however, and his operations be but once comprehended within it, from whence they cannot be rationally excluded; and it is thus implicitly transferred from the province of Reason to that of Faith: for God and his operations, cannot be perceptible to our senses, but must be merely objects of belief, as they are mystic and inscrutable. And the concessions which are thus made by Science to the claims of Religion, are on the other hand compensated, by the tribute which is exacted from it in return. For it is not less strictly exacted from Revelation, that the language in which her doctrines are disclosed should be consistent with the dictates of Reason. Thus while it is in conformity with its most rigid exactions, that what-

ever be addressed to our faith, though much be maintained which is superior to our comprehension, there shall be nothing which involves an inconsistency or contradiction.

The futility of the exception, which is taken against Revelation, as addressing itself to any faculty but reason is thus fully exposed: since Philosophy herself in the pride of her elevation and the security of her retreat, is assailable by the same objection. When deprived of the support, for which she leans upon Faith, she can rest upon no secure or adequate basis. Nor are we to be told, that, in the extent and nature of the demands which are made upon our belief, in the mystic doctrines of Revelation, an immense disparity exists; when compared with the assent to the few fundamental truths which are claimed from it in Science. For notwithstanding the beneficence of the goddess whom the votarists of Philosophy worship in Reason; it must be mortifying to the consequence which they assume to be informed; that they owe obligations likewise to Faith, in whose countenance or support they take little pride, which equally demand their grateful acknowledgments.

Without engaging in a minute induction, to substantiate this charge, which may at first sight appear paradoxical, a bare reference to one or two sciences, on which time and labor have been recently lavished, must be sufficient

to evince, that hypotheses are maintained on scientific grounds, in yielding an assent to which, we must not only surrender our faith, but sequester our reason. Some of the fundamental principles in analytical science and the doctrine of the infinite, have been hitherto found so intractable, by the professors of mathematical and demonstrative truth, that, in their attempts to reduce them to rational grounds, they have attained no success, beyond that of exciting further doubt, or drawing more largely upon credulity. To my own humble capacity, the doctrine of the eternal Filiation, and of the Trinity in unity is comprehensible and clear, when compared to the principle on which we are required to conceive a curve the same as a right line, and to admit the finite contains the infinite. If these licences, which however conformable to science will not be easily reconciled to logic, be denied the computer, what authority, I would ask, remains to the infinitesimal calculus; and when this implement is withdrawn, what stability can remain to the structure of modern Science, of which it is the cement and scaffolding? Yet when we even concede the use of an instrument of such an indefinite range; in our endeavours to reach at truth, it leaves us to content ourselves with a mere approximation to the object of our pursuit. I shall not dwell upon the insufficiency which it betrays, in conquering

difficulties of no apparent magnitude, which from the time nearly of its birth, have excited the ambition and exercised the skill of its disciples. Nor shall I insist at any length, that the simplest propositions, on the determination of which so many consequences depend, continue unsolved ; that even the exact proportion of the diameter of the circle to its circumference, or of the diagonal of the square to its side, or of the circle and square to each other, still remain among the desiderata of science ; that we can in fact form no estimate of the size of a curvilinear figure but by considering it angular, or by regarding it with reference to a circle, considered a polygon with an infinite number of sides. The anomalies which affect the pure Mathematics necessarily extend to the applied ; and impart their imperfections to Mechanics, and Physics. While those sciences merely relate to the doctrine of quantity, and the instrument used in its measurement proves to be so ductile and pliable ; it can be little surprising, that we should have conflicting hypotheses, supported on nearly equal authority, and find the same premises, in different hands, lead to the most contradictory conclusions. When the modifications and disturbances to which the abstract principles of science are exposed, from the properties and changes of objects in nature, are taken into the account ; our wonder must cease, that theory

and fact should be so often at variance ; that, from the motion of a projectile to the measurement of a meridional arc of the earth, the philosopher should be fated to have his sublime deductions so often refuted by unlucky experience.

The analogy that subsists between the different departments of Faith and Reason, may be consequently traced to an extent, that the disciples of philosophy, may not be willing to conceive, nor disposed to acknowledge. For it must be allowed, that there are mysteries in both ; that in both no inconsiderable portion of our knowledge depends upon belief, not perception. If the philosopher suppose there is room for indulging a little scepticism in Religion, the theologian has no less reason to conceive there is cause for exercising some doubt in Science. Beyond the most extended view, which either faculty commands, an interminable prospect lies ; from which we must turn, however elevated our position, or clear our conception, under the most humiliating sense of the limited nature of our capacities, and the contracted sphere of our knowledge.

But while it is admitted, that those faculties have a range over much ground that is common ; it must be observed, that there are many points, in which their respective provinces are distinct and separate. And unhappily, from a confusion of the boundary line by which they are divided,

much of that error and misconception has arisen, which has been productive of the most pernicious consequences to Religion. In a fruitless search after that species of proof which is incompatible with the subject it is intended to establish; the evidence is overlooked or undervalued by which it is really supported.

From no circumstance, however, have more fatal effects ensued to the Faith, than from the disregard of historical testimony, on which Revelation is properly supported. As this species of evidence is established by the method whereby matters of fact are commonly proved: its conclusiveness cannot be resisted until its credit is shaken or invalidated. The early physico-theologists were so fully impressed with the importance of this principle, that they included it in the postulates, on which they built their reasoning. Whatever the common tradition asserted of the origin of things, they maintained was not to be rejected, unless it might be refuted on scriptural or philosophical grounds. A minuteness and consistency in the testimony transmitted, even to the preservation of the most remarkable dates, in the most distant regions, and from the most remote times, sufficiently prove, that they have not overrated its value.

As the cause of Revelation is liable to suffer from a disregard of the peculiar testimony by which it is thus supported; it is likely to be

equally affected by a fruitless search after that species of evidence, which is inconsistent with its nature, as founded upon faith; and incompatible with its object, as addressed to a different order of mankind from the learned and philosophical.

The intention of Revelation was essentially different from that of inculcating the truths, and advancing the interests of Science. It properly consists of a history merely of the acts of God, in creating the world, and governing it by his providence; and is delivered in a plain unambitious narrative. In detailing the incidents of which it is composed it employs no abstract method of reasoning: confining itself to a simple assertion of fact, it affects neither argument nor demonstration. The species of evidence on which it sustains itself, though admirably suited to reasonable conviction, is not intended to be irresistibly conclusive. It indeed contains sufficient moral inducements to influence our belief and conduct; but without offering any violence to our freedom of opinion or practice. It has been thus wisely accommodated to the necessities of all mankind; made level to the capacities of the simple and uninformed, but constituted to satisfy the demands of the most cultivated and refined. The people to whom it was originally addressed, were in the lowest state of moral and intellectual degrada-

tion : and were thus unfitted for receiving the light in its plenitude, by the brightness of which their feeble sense would have been overpowered.

V. When these considerations are taken into our estimate, the obstacles which oppose my progress in the office which I have undertaken, may be surmounted with little trouble or exertion. The separate claims of Science and Revelation being once adjusted ; the vain pretensions advanced, on the one side, and the extravagant requisitions made on the other, being placed in a just light ; the distance by which they are separated may be more easily reduced, or shown to be imaginary. And however divided or devious the paths which lie open to research ; as the discovery of TRUTH is the great end of our pursuit, in tending to a common object they limit the range, and abridge the labor of inquiry. If the apprehension of that glorious apparition, the sight of which is the highest reward to the labour of research, be attainable by mortal sense ; some approach is made to the divine vision, by withdrawing the veil in which her loveliness is concealed, or removing the mask which enables Error to assume her air, and counterfeit her likeness. Where the heavenly wisdom stands opposed to the earthly ; it should be consequently our purpose to show, that if the contradiction be not apparent, the

language in which the one expresses itself is misunderstood, or the character to which the other pretends is false and affected. For, "Truth cannot be opposed to truth." The knowledge which assumes to be devised by Him, who can be as little deceived as conspire in deceiving others, must establish its pretensions to so sacred a character. But that which demands our assent under the specious title of science, may but usurp its name, without sustaining its reputation; as the various conflicting hypotheses, which offer themselves to our faith, on nearly equal grounds, fully evince, without our taking it upon us formally to prove the imputation. When indeed the character is indisputably maintained, it is incumbent on us to show, that between the divine and demonstrated truth, we can prove an identity, or trace an analogy.

Such is the part which I have the honor to be called to discharge: the difficulties attendant on which, formidable as they seem, gradually disappear, as the object to be attained is more steadily and closely contemplated. The task, I am not unconscious would have fallen, with brighter prospects of success, into other hands; had it been undertaken by one, whose pursuits rather inclined him to Science than Theology; who had that direct access to the sources of information, and freedom from professional avocations, which my situation allows me but little

means of enjoying. But however sensible of the difficulties with which I am beset, in approaching a subject, which is rendered formidable atonce by its magnitude and its delicacy; in one or two animating considerations, I find sufficient motives to undertake it.

Had the range which the discussion opens to philosophic inquiry been extensive and minute, I should have shrunk from the attempt; and left to more able and practised hands, the task of doing it justice. But the scope which is afforded for such investigation, in the inspired writings, is necessarily limited in extent; and from the general character of the sacred language and description, its scientific allusions are confined in their nature. The information which very extensive, though often desultory, reading has supplied, may be of course adequate to remove every difficulty with which it is encumbered. And whatever be the result with which the experiment is attended, I shall not think my labor frustrated, nor my time misspent, if it prove instrumental in stimulating more efficient laborers, to explore a track which I have barely entered upon; and to perfect that which I have but commenced, or have imperfectly accomplished. Of the extensive range of Science which has engaged my divided attention, every department is rich in mines; the stores of which cannot fail to re-

ward the labor of those who may explore them. In the sciences of Geography and Natural History alone, a scholar of the highest repute has found matter for learned and extensive works; and in the Mosaic Cosmogony, the sciences of Astronomy and Geology would respectively supply materials for a course of lectures.

But it is from the extraordinary aspect of the present times, that I derive the strongest motive to engage in the attempt; and that others will probably find inducements to push their efforts with greater force and advantage. In the increasing ardor with which scientific inquiry is now pursued, when every facility is not merely afforded to individual exertion, but means are used to draw out the general strength in combined operation; some anxiety, if not apprehension, may be felt, as to the direction in which this growing power may be ultimately turned. When the interests of Philosophy are exclusively advanced; there can be no room to attend to the inobtrusive claims of Religion. Experience has besides unfortunately proved, that as the one advances in its pretensions, the other is found to decline in its reputation. And notwithstanding the care which has been employed to dull the edge of apprehension, by deprecating the notion of danger, or imputing the fear of it to a morbid sensitiveness; it seems

not easy to divest ourselves of all gloomy anticipations of the future.

When opinions are professed, which are separated by a slight partition from maxims, that had, if not for their avowed, for their intended, object, the subversion of every moral and religious principle; it cannot appear strange, that we should behold them with a stronger feeling than that of suspicion. Where the threatened evil is open and professed, there is perhaps less ground for anxiety; as the disgust and horror which it is calculated to excite act as a preservative against its contagion. But when it assumes a more ambiguous form, and comes recommended by an advocate, whose countenance would adorn a better cause; from the splendor of his name a false light is unfortunately shed around it. When the student in philosophy is assured, that “the power of man over nature is limited only by one condition, that it must be exercised in conformity with the laws of nature:” it may be thought, that the critical chemistry is over-refined, which pretends, by the application of a test, to detect any latent poison in so salutary a principle. Yet the line by which it is separated from the doctrine of “perfectibility,” as maintained in a foreign philosophical school, is so faint, as not to be easily discerned. For, though it may be urged, in illustration of any ambiguity in the phrase, that the

precept is limited by the subject to the power which *Philosophy* gives us over nature ; such in effect was the meaning of those, who rejected Revelation from their system, and included, under that term, both Religion and Science.

The principle, however, deserves animadversion, not merely as overlooking or suppressing the truth, but as positively misrepresenting it. There is no science which can be prosecuted to any considerable extent, without proving, that the bounds set to man in his power over nature, are contracted by the limited nature of his faculties. And the introduction to physical science which the author, whose principle I venture to question has given us, brings confirmation of this assertion in every page of his discussion. The precepts which he delivers for prosecuting research, where we still find nothing but doubt and obscurity ; the instances which he records of total failure, in eliciting truth, where the best constructed plans were followed for its detection ; the contradictory principles from which he informs us the most learned and skilful inquirers have commenced, and the conflicting conclusions in which their investigations have ended ; the acknowledgment of positive ignorance, on subjects the most patiently examined ; and the confession of a limit in every subject which inquiry is unable to pass ; all intimate, that the condition by which man's control over nature is

circumscribed, is not to be sought in the exercise, but in the limitation of his powers. The lesson which the study of this subject properly inculcates, very different from inspiring us with a confidence in our strength, tends to impress us with the most mortifying sense of our weakness. Instead of encouraging a vain hope, that nature, by any exertion, may be reduced under our absolute control ; it teaches us humility and submissiveness to its adorable Author. By leading us to a just estimate of our powers and exertions, it prompts us to direct our attention and efforts towards a higher and better state, in which our faculties will be improved and our ignorance enlightened. Thus by an exact discipline, it prepares us for that glorious and happy state, in which our knowledge, as well natural as divine, will be freed from the uncertainty, contradiction and error, in which the fallibility of man has but tended to involve it.

Visions not less splendid than those with which our hopes are now deceived, were formed by the philosophers of the last age, for the scientific and political regeneration of mankind ; which equally held forth the illusory promise, that our powers might be improved and our knowledge extended, beyond any assignable limits. Of the bitter fruits of which this promise was productive, we had a perfect taste ; and if our security, that the labor of the culti-

vator will not again be requited with a crop as noxious and rank, be sought in the nature of the soil and the mode of its tillage ; even now may we decide on the prospect of the harvest. If the bodement of ill be well founded, and the danger inevitable ; by anticipating its approach we may be the better prepared, if not to defeat, atleast to bear it with fortitude. I atleast shall not feel the self-reproach of not having contributed my part, if not to avert the evil, to provide against its consequences. It may be indeed reserved for holier hands to raise the altar, by which heaven may be propitiated and the gathering pestilence staid ; but, like the humble Jebusite, my plough, my yoke, and threshing floor are ready for the sacrifice, which may arrest the destroying angel, in visiting the national contumacy or transgression.

In following the injunction of the Apostle, “ to keep the Faith which is committed to our trust,” we should not—I trust, we shall not—have any thing to apprehend from Philosophy: unless indeed from that spurious kind which he declares should be avoided. The interests of Revelation and Science, however they may have been unfortunately opposed, are not, I hope, incompatible. And the task, in which I am engaged, must be without intention or effect, if it fail, in some measure, to reconcile them. Let not my object be, however, misunderstood,

as laboring to effect an unworthy compromise, where they seem indisposed to harmonise or coalesce. The tribute which I bear is not offered to the earth-born, but to the heaven-descended sister. When from some imperfection in our information and discernment, Religion and Philosophy are found to be opposed, beyond the hope of reconciliation; I trust, that no debate as to which should give place, can arise within these walls, in which I stand the unworthy advocate of Revelation. For I cannot suppose, that here any doubt will be for a moment entertained, whether man's rank in the scale of intelligent beings, distinguish him as a scientific or religious animal. I cannot suppose, that a question can arise, whether the knowledge which we may attain of God and his operations, or that we may acquire of Nature and her laws, distinguish us from "the beasts that perish:" who, however they may surpass us in their instincts, senses and corporal powers; as they are incapable of sharing one of our moral and religious impressions, want the distinctive attribute of our nature.

It would be a degree of injustice to the claims of Moses, to institute any comparison between the sacred and the oriental philosophy. It cannot be easily conceived, how he could have escaped the contagion of that system which spread itself universally over the East, and

which captivated alike the Greek philosophers and the Hebrew sages; had he not written under the direction of a higher and infallible monitor. If it was not invented by the priesthood of the people among whom he was educated; it had attained that ascendancy in Egypt, previous to his times, which it maintains to the present day through the vast continent of Asia. Could we regard his work as a merely human composition, this system would indeed form the justest criterion, by which its philosophic pretensions might be relatively tried. But as professing to be delivered by immediate inspiration, it should stand the strictest scrutiny. His philosophy consequently challenges a comparison not merely with the opinions of the sage and inquiring of his own age, but with the discoveries of the wise and learned, who have prosecuted inquiry into the mysteries of nature from his times to the present. As investigation has been so long pursued, under every advantage for the attainment of truth, and is now supposed to have arrived at unexampled perfection; in submitting, to such a criterion, the opinions of a writer, who flourished above thirty-three centuries since, it will not be denied, that they are subjected to the severest ordeal.

If it were necessary to my purpose, it would carry me far beyond my present object, to establish this position by an induction of facts, se-

lected from the various discoveries of those sagacious persons, to whom we are indebted for the revival and improvement of science. Instances by which it is confirmed present themselves in every part of the discussion on which I have entered. It will suffice, on the present occasion, to revert to the concessions which have been made to the claims of Revelation, in that unrivalled work, the appearance of which forms a new epoch in the annals of science. The immortal author, who was not merely the ornament of this nation, but the glory of the human species, while he asserts the legitimacy of reasoning from the phenomena of nature to its divine Author, concludes his imperishable labors, with that statement of his opinion, which is not more remarkable for the soundness of its Philosophy than the purity of its Theology. While he rejects the ancient error of a mundane soul, and shews the inefficiency of the modern attempts to refer the system of the universe to mechanical causes ; he establishes the necessity of admitting the existence of an intelligent and superintending Divinity. As his words form little more than an apposite comment upon the scripture doctrine of the nature and providence of God ; they constitute a proof, that the most profound Philosophy, in its latest deductions, has arrived at no conclusion on this subject, which had not, from the first, been anticipated

by Revelation. And the testimony, thus voluntarily borne to its character as divine, is rendered more valuable by the consideration, that it is not less strongly marked by its positive rejection of that false Philosophy, into which the education of Moses made him liable to be seduced, than by its assertion of that sound Theology which was first promulgated in his writings.

LECTURE II.

GEN. II. 4.

These are the generations of the heavens and of the earth, when they were created, in the day that the Lord God made the earth and the heavens.

THE disclosure of any truth, purporting to be delivered immediately from God, though it conveyed nothing interesting or important respecting the destiny of man, appears so imperiously to command attention and respect, from those to whom it is addressed; that their disregard or rejection of it may be at first considered as difficult of explanation as of excuse. The paradox would be, indeed, inexplicable, were the authority on which it claimed our assent admitted, but for a moment. Could we be persuaded, that a mandate were addressed to us, from the throne of the Most High, commanding obedience under a promise of reward, or a denunciation of punishment; it cannot be reasonably doubted, that the authority from which it emanated would compel the most thoughtless and negligent to receive it with reverence and submission.

Of this want of faith in the divine declarations and promises, which is the true cause of a

want of Religion, some explanation may be found in the inconsistency which Revelation is conceived to betray with demonstrable truth, as established by Science. And as the objection has been rather skilfully evaded, than successfully repelled, it has lost little of its force, from the efforts which have been employed to remove it. The difference, it is pleaded, is widely disproportionate between the ends proposed in the compilation of a historical and of a scientific work ; and the means by which they are respectively attained may be wholly incompatible with each other. It seems therefore to be not merely unjust, but unreasonable, to hold the author of the one bound to discharge the obligation which is incurred merely by the other. A considerable licence may be thus extended to the sacred historian, in departing from the rigid prescriptions of science ; and he may with greater justice claim the exemption, as the reader, who is little interested in his attention to technical accuracy, may be wholly incompetent to appreciate or even to understand it.

This defence, however, which assumes rather the form of an apology, than a vindication, it must be confessed, is weakened in the application ; in which this distinction between history and science disappears. The sacred legislator, it is admitted, addresses us in a religious, not a philosophical character ; but in demanding our

assent to his communications, as delivered by inspiration, we have some right to expect, that as far as they extend, they should maintain their pretensions to infallibility. His account of the Creation forms as much an integral part of his history, as his narrative of the delivery of the Israelites from the Egyptian bondage: the obligation seems therefore to be indispensable, that in both cases they should be historically true.

With respect to the exemption, which is claimed for the historian, from technical precision, it must be likewise acknowledged, that a wide difference exists between a licence and a latitude of expression. The former, which implies an allowable deviation from an acknowledged standard, can be alone urged in his defence; while the latter, which may possibly be a deviation from truth, as well as a looser method of stating it, offers nothing in his justification. The distinction will be, perhaps, best understood by an example. The astronomer, who has once explained his system, and described the sun as in its centre and *at rest*; when accommodating his details to the phenomena of the heavens, may speak of its *rising* and *setting*, and construct tables for computing its apparent *motion*. The historian may equally find it expedient or necessary, to adapt his descriptions to the ordinary appearances of nature: and may thus, by a like latitude of expression,

describe the sun as “set in the firmament, to divide the day from the night,” and to distribute the year into seasons. But in thus departing from the abstract or philosophical standard of truth, he affords no evidence, that the deviation was intentional, or that he formed any other view of his subject, than that which may be deduced from his words by a literal interpretation.

Such is the main difficulty to which the question may be reduced ; the general force of which may be admitted without much apprehension for the consequences which will ensue to the cause of the sacred historian. For, admitting Moses to have described the progress of the creation, according to the obvious appearance, which the objects of nature present to his readers ; it is perfectly insignificant to the general purposes of Revelation, whether he neglected or observed a philosophic precision in his descriptions ; as our advances in religion are altogether independent on our progress in science. And, regarding his work in the humblest view, it may be no less conducive to the ends of historical narration, and of course consistent with historical truth, that things should be described according to their obvious appearance, rather than their philosophical nature and constitution : for the preparation of mind requisite in the reader may render a rigid technicality of phrase, as abstruse and unintelligible, unsuited to the general pur-

poses of instruction. They who are but moderately versed in astronomical science, need not be informed, that it admits of explanation from either view of the phenomena of nature; and that the astronomer, to be at all intelligible, is frequently obliged to abandon the real for the apparent; and to explain himself, on the assumption, that the apparent is real. If this latitude of exposition be conceded to the philosopher, it can be scarcely denied, in justice, to the historian, who writes under an exemption from the restrictions which science imposes. But, to reduce the defence of the sacred legislator to the very lowest grounds, it may be even disputed, whether it is necessary to his vindication to suppose him acquainted with more than the obvious appearance of nature; beyond which he has evidently taken no pains, that his readers should have extended their knowledge. It is certainly not necessary to the defence of his inspiration, that it should have extended to omniscience. It cannot be required of us to prove him equal to God, in claiming that he should be received as a prophet. Though inspired, some limit must have been assigned to his knowledge. The most unreasonable expectation that can be formed of his infallibility can never proceed so far as to require,—That he should have been versed in modern science, have been even acquainted with its elementary principles, much

less have anticipated the discoveries of Kepler and Newton. His vindication may be therefore maintained, without in the least impeaching his credit as an inspired historian, or invalidating the general truth of his narrative, on the supposition, that he did not nicely distinguish between the obvious and the real state of the phenomena, and even wrote without any consciousness of such a distinction.

But in placing the defence of the inspired writer thus low, the greatest injustice is really offered his character as a historian. It admits, on the contrary, of proof, that he must have been sufficiently versed in the principles of the science, to have accommodated his descriptions to the views entertained of it by the moderns : but, that, in the great purpose which he had in view, a paramount obligation compelled his rejection of such a course, for that which he has more wisely adopted. In the substantiation of this point, the legitimacy of the method which he has adopted will be established on the most unexceptionable authority ; as justified by the example of the professor of science.

I. When the state of science in the colleges of the Egyptians, among whom Moses received his education, is considered ; no doubt will be long entertained, that the Hebrew lawgiver could not have been unversed in the general principles of astronomical and geological science, as

at present maintained by the moderns. In the various speculations in which the ancients indulged, on the nature of the universe, it is now generally admitted, that the true system, in which the sun is supposed to occupy the centre, had been known to Pythagoras, and that his knowledge of it had been acquired during his residence among the Egyptians. From the same people, it admits not of dispute, Plato became acquainted with those periodical revolutions, to which it is now conceived—how truly is nothing to our present purpose,—that the earth has been subjected in successive deluges. It would appear from the accounts of ethnic writers by whom Moses is mentioned, that the sources of this information, as preserved among the Egyptian priests, had been thrown open to the Hebrew lawgiver; an access to which had not been denied even to the Greek philosophers; had we not the authority of inspiration for believing, that “he was learned in all the wisdom of the Egyptians.” The conclusion, however, rests not merely on inference or presumption, that the true system of the universe was known to the author of the Book of Genesis;—of his probable acquaintance with the doctrine of the periodical revolutions of the earth, which is generally received by the modern geologists, a more suitable occasion will occur to speak hereafter. To prove that the author of that work

could not have remained unacquainted with the solar system, which Pythagoras had imported from Egypt into Greece, satisfactory evidence has been deduced from the institutions of which Moses was the author ; many of which had been framed with reference to the popular superstitions of that country, for which they were intended to provide a corrective. In the Tabernacle, at the first, as latterly in the Temple, it is generally admitted by the learned in Hebrew antiquities, as well Jews as Christians, the universe had been prefigured. The Holy of Holies, in both places of religious worship, corresponded with the highest heaven, which was sanctified by the immediate presence of the Divinity. Each place and implement of the sanctuary, was made the symbol of some object in the natural world ; and thus tended to inspire the beholder with a due sense of the power and presence of the Being to whom it was dedicated, and who was especially worshipped as its Creator. Of the sacred utensils, the golden candlestick with its seven branches represented the seven celestial bodies, which were discernible in our system ; one of which was intended to express the sun, and was consequently distinguished, if not by its size, by the place which it occupied in the centre. And the conclusion derives no slight corroboration from the fact, that the first temples which were erected to Vesta in

Italy, by the propagators of the Pythagorean opinions, were of a round structure, in imitation of the circular form of the universe; and that the sacred fire which represented the sun, was preserved perpetually burning on an altar, that was invariably placed in the centre of the building.

The sacred historian, however, when employed in describing the origin of this system, has obviously discarded the peculiar views which were maintained respecting it by the Egyptians or Pythagoreans, and as I have already intimated, not without adequate reason. In justification of the course which he followed, it has been consequently urged, that it consisted not with the specific object which he had in view; as engaged in delivering a religious not a philosophical system. His immediate province was that of the legislator and divine, not of the astronomer or geologist. As vested with the higher character of a sacred lawgiver, his subject had but a remote and accidental connexion with natural science. And in advancing the paramount object which he had in view, he was bound to provide that the moral propriety of the scheme which he delivered should never be sacrificed to philosophical precision.

Nor should it be forgotten, in justification of the peculiar course to which he was thus plainly restricted, that he was often compelled to be ex-

plicit, when the attainment of the object which he had in view rather required him to be silent. Had the nation for whose instruction he wrote, imbibed no notions but those which had been transmitted by their progenitors; had they adopted no errors from the nation by whom they were sentenced to undergo the debasing consequences of servile occupation; the great moral purpose, which he proposed, might have been secured, in the disclosure of little more than the single truth which is imparted in the opening sentence of his writings. Had he generally declared, “in the beginning God created the “Heavens and the earth:” or specifically stated as in compiling the Decalogue, that “in six “days the Lord made heaven and earth, the sea “and all that in them is, and rested the seventh “day: wherefore the Lord blessed the seventh “day and hallowed it:” the religious object which he had immediately in hand, in commencing his history, would have been apparently answered. But upon the subject of the Creation and of the origin of evil, to which he first directs his attention, the grossest errors had been maintained by the Egyptians; as may be collected from the particular superstitions, with which it appears the Israelites were infected, when, on his ascent into the mount, they were withdrawn from his immediate inspection.

From the particular nature of that idolatry,

into which the Israelites fell, in erecting the golden calf, it plainly appears, that the veneration of Apis had at this early period become prevalent in Egypt. And in the worship of that god, it is as clearly implied, that the doctrine of Pantheism, which has prevailed immemorially throughout the East, had already struck a deep root in that country. Of this superstition it is a fundamental tenet, that all nature,—which the pantheist deified and revered as God,—is an emanation of the divine essence. By the upholders of this superstition it was supposed, that the Deity produced all existences, whether animate or inanimate, spiritual or corporeal, from his own substance; into which they were again absorbed after a stated period, to undergo similar revolutions in endless succession. In describing the process in which all things in this manner, proceeded from, and returned into God, they considered light as the first emanation of his essence, and matter as its last and lowest modification. Hence every object of organic or inorganic nature, not merely of the animal but vegetable world, received a superstitious veneration, and in some instances was paid religious honors.

It is not necessary to my purpose, to point out the several particulars, in which this dogma of emanation from the substance of the Deity is opposed by Moses with the doctrine of origina-

tion by his creative power. It will be atonce perceived, without the formality of proof, that in contravention of these errors, the inspired legislator particularly inculcates,—That the Creator was not to be thus confounded with the creature: That instead of emanating from his substance, they were formed out of the inert and senseless matter which he had called into being: That instead of thus proceeding and returning into his essence through interminable ages, they were in the course of six days brought into existence, the seventh being peculiarly set apart, by the cessation of the work of Creation, and dedicated to religion: That the Creator alone was consequently to be worshipped as God, more especially upon the day, thus consecrated to his service, when praises and adoration were to be offered for the works which he had brought into existence.

To inculcate these truths, in opposition to the gross errors of the pantheist, was in a word the great moral purpose of Moses; or, that I may generalize the position, the grand and ultimate object of the Revelation which he was chosen partly to promulgate. And to confine our observations to the single science under review, it seems not possible to conceive how that object could have been advanced, by initiating the Hebrews in the secrets of the physical astronomy. On the contrary, a very small share of

consideration must enable us to perceive, that, by an attempt so useless and hazardous, his purpose must have been wholly defeated.

Had the Hebrew lawgiver undertaken to unfold the few astronomical truths for which he was indebted to his Egyptian education, and informed his hearers, that it was the sun which was at rest, and our planet that is in motion; had he anticipated, by inspiration, the wonders with which modern science has brought us acquainted, and revealed to their unprepared minds, that the earth is swept through the heavens, at the incredible rapidity of about 1000 miles in a minute, and that, in addition to this motion, an inhabitant situated at equal distance from its poles, while he deemed himself at rest was whirled around through the same space, in an hour: it is difficult to conceive what other effect could have been expected from the revelation, but to violate their prejudice, and shock their credulity. Had he assured them, that the motion of which they conceived themselves witnesses was but apparent, while that of which they were insensible was real, and that, rejecting the testimony of their own senses, they should receive as a deduction from science, what they could as little understand as feel; it is not easy to imagine, what other result could have followed from the disclosure, but the loss of all reliance on his mis-

sion and authority. Nor in forming this inference, need we make any deduction for the state of invincible ignorance, to which it may be conceived the Hebrews were reduced, by their bondage in Egypt. So wholly does our capacity to comprehend depend upon the light in which we are accustomed to regard familiar objects, that the professors of the science, whose object is the inculcation not of moral but of philosophical truth, are obliged as I have already observed to accommodate their descriptions to the ordinary appearances of nature. To appeal to that authority, which may be regarded as definitive, in the present discussion; by the astronomer himself, who affects to take offence, at the want of technical precision in Moses, it is notoriously violated, in the discussion of his science. In delivering its rudiments, the principle is scarcely laid down, that the sun occupies the centre of his system and is at rest, when it is abandoned, for that view of the phenomena, which from its familiarity is more easily comprehended. Of the licences assumed by him, in reference to this great luminary, the tables constructed, as I have already observed, for computing its motions afford a sufficient instance. Even, of those stars, to which from their stationary nature, he gives the appellation of fixed, rules are laid down by him, for calculating the rising and the setting.

I affirm, therefore, that no objection can be urged against the sacred historian, by which the scientific professor is not more deeply affected: no licence being taken by the one which is not assumed by the other. The main difference by which they are separated lies in the accident of a different subject, to which they have accommodated the respective methods of their discussion; a close adherence to the *real* state of things being as much the distinctive mark of the scientific manner; as a conformity to the *apparent*, is the proper characteristic of the historical.

Such is the utmost licence which we claim for the sacred historian; whose course was, in an eminent degree, limited by the object which he had in view. As a religious, not a scientific instructor, he was obligated to express himself in ordinary language, and consequently, according to the ordinary appearance of nature. Through this medium we must therefore regard his descriptions, if we would take a philosophical view of them; and into this language we must translate them, if we propose to submit them to the severer test of science. In laying down this principle for understanding his words, we assume no licence of interpretation, to which, as a merely moral instructor he was not entitled, and to which the professors of science have not given authority, by their repeated example.

From the neglect of this obvious distinction,

according to which the record of the Creation, if taken in a philosophical view, must be understood; every difficulty has arisen, with which the explanation of it, in such a view, has been embarrassed. The objections to which it has been consequently exposed, have been further aggravated, by the vain and ineffectual attempts to accommodate the literal description of the historian to the technical precision of modern science. Hence has originated the equally fruitless endeavor to limit the inspired writer's subject, and to confine his record to the mere creation of the earth; in contravention alike of the obvious sense of his terms, and the natural connexion of his subject.

II. To impress us with a just sense of the omnipotence of the Creator, the historian of his dealings with mankind opens his narrative, with an assertion of that great leading truth, which is among the fundamentals of Natural and Revealed Religion. "In the beginning God created the *heaven* and the *earth*." And the sense in which he intended this passage should be received, seems to be determined by the place he assigns it as introductory to the subjoined description. The natural connexion which it maintains with the subject annexed, plainly appears from the explanation in the context, describing the operations of the fourth day, and from the recapitulation of the text, which re-

counts the entire work of Creation; "These
" are the generations of *the heavens* and of *the*
" *earth*, when they were *created*, in the day that
" the Lord God made *the earth* and *the heavens*." Did this passage admit of ambiguity, its meaning would be fixed beyond dispute, by the institution of the sabbath, the account of which immediately precedes, or by the command of its observance, which is subsequently recorded. "Remember the *sabbath day* to keep it holy . . .
" For *in six days* the Lord made *heaven* and
" *earth*, the sea and all that in them is, and
" rested the *seventh day*: wherefore the Lord
" blessed the *sabbath day*, and hallowed it."

The extent therefore of the Creation, whatever difficulties may be mooted respecting the time employed in it, is fixed by the text, beyond reasonable controversion. The precise subject of it consequently depends upon the force of the terms it employs; "the heaven
" and the earth;" or as the latter term admits of no dispute, exclusively on the meaning of the former. In the common sense, however, in which the term 'heavens' is taken, it is extended to *the planetary system*. In this view, it is not only represented, by the Hebrews and Egyptians, to whose phraseology Moses necessarily conformed, as signifying the place occupied by the stars; but is represented as of a sevenfold division, each of which was designated by the name of a planet. The limitation which

it thus receives, as confined to the seven spheres, or heavens, precludes its extension to the concave of the fixed stars ; which is indeed, contra-distinguished, as “ the heaven of heavens.” Under the term thus employed by the inspired historian, in the text, the bounds of the Creation are consequently determined ; and thus appear to have extended to the planetary system, of which the sun is the centre. The exposition thus deduced from the proper force of the term, is abundantly confirmed, by the circumstantial description of the operations of the fourth day ; in which, as I shall hereafter have occasion particularly to show, “ the *sun* and the *stars*” are expressly included.

In proceeding, from thus determining the limits of the Creation, to describe its progress ; the sacred historian deduces its commencement from the diffusion of *light* through the system. In the sublime image in which he paints the descent of the brooding Spirit upon the rude and shapeless earth ; he conveys the highest idea of his omnipotence, in representing, the illumination that beamed over the chaotic mass, as rising at his command. “ The earth was “ without form and void ; and darkness was “ upon the face of the deep : and the Spirit of “ God moved on the face of the waters. And “ God said, Let there be light and there was “ light.”

The discoveries of science acquaint us with

two species of appearances in the heavens which have been deemed analogous to our system ;— the fixed stars which are supposed to resemble the sun, and consequently to be respectively attended by planetary bodies ; and those nebulous appearances, which shed a dim light through the heavenly expanse, and are not unfrequently distinguished by luminous points and even stars, of different magnitudes in their centre. The changes to which they are observed to be subject, have given rise to the supposition, that they also are systems but in the state which awaits a more perfect development from the plastic hand of their Creator. In these phenomena, it may be allowed, we discover appearances, which possess a closer analogy than any other with which we are acquainted to our own system, in that incipient state in which it is described by Moses.

Whether we may pursue the analogy further, and building on the speculations of the physical astronomer, may suppose that out of the mass of nebulous matter all the bodies which circulate in our system have been produced ; that in comets this matter is exhibited in a state of less perfect, and in planets of more perfect condensation, it suits not my purpose to inquire. My business is not with the establishment but the research after analogies.

On the assumption, that the *nebulæ*, which have been assimilated to imperfect systems,

have given birth to our own, on the first of the six days employed in the creation; we may suppose the bright particles of the luminous matter were concentrated in the atmosphere of the sun; and the more opaque condensed in the various planets with which it is attended. Thus far atleast the analogy may be fully admitted to extend. From those nebulous appearances it is obvious, that light may exist independent of any body similar to our own sun, from which it may be conceived exclusively to emanate. In the difference observed between nebulosities and nebulous stars, the intermediate state of our system between the diffusion of light on the first day and the perfect formation of the sun upon the fourth, is very clearly illustrated. The telescopic examination of the body, which occupies the centre of our own system, of which our knowledge is more accurate, brings additional weight to the same conclusion. The sun is observed to have its light detached, in the form of an atmosphere, from the solid orb which forms its body; from the furious heat of which it appears to be protected by a circumambient medium. And if we do not embrace the notion of those who suppose, that the source of heat is seated in the interior nucleus, while the fountain of light is situated in the radiant envelop; it will not be easy to form a reasonable conjecture respecting their different uses.

In illustration, not merely of the origin of our

system from a luminous expanse, but of the simultaneous production of the planets that compose it; the hypothesis of a physical astronomer, of the highest celebrity may be cited. His conjecture is, that the forms and motions of those bodies may be adequately explained, on the supposition, that they originated from the matter of the solar atmosphere, expanded by heat to the utmost bounds of the system, but condensed by cooling round different centres of gravity.

In applying this hypothesis, which may be easily reconciled with the preceding, to account for the motion and direction of the bodies of our system, its celebrated author conceives the luminous matter, of which they were originally composed, had revolved round the sun. It was, thence, not only attracted to the centre of gravity which resides in the solar orb, but to as many centres of gravity as there are planetary bodies. Some portion of it, however, which remaining uncondensed still preserves its original motion, and occasioning the phenomenon which is termed the zodiacal light, so far gives evidence of the probability of the hypothesis. On these principles he supposes it possible to account for the former fluidity and present compressed figure of the planets, and for the rotation, on their axes and in their orbits, which is preserved by them and their satellites. From

hence also it is supposed equally to follow, that their orbits are nearly in the same plane, and possess so small a degree of eccentricity. For a body so constituted, as the sun is supposed in this hypothesis, would preserve the motion of its atmosphere in the plane of its equator; and as the exterior atmospheric zones must have a greater velocity than the interior; the bodies formed from them would have a rotation in the same direction as the matter from which it is conceived, they were formed by condensation.

To those who may enter with difficulty into the spirit of this reasoning, it may be however, not inexpedient to observe, that the formation of bodies so solid, from matter so subtle by condensation, may be more readily conceived, from considering the opposite effect of dissipation by heat. By this irresistible agent, the power of which admits of being indefinitely increased in intensity, the most ponderous solids may be easily reduced to a liquid state, and from a liquid state be totally dispersed in vapor. As it is now a principle generally acknowledged in physics, that gravity and heat are antagonist forces in nature, the union and consolidation of the particles of matter must be thence conceived as physically possible on the one side, as their dissolution and dispersion on the other.

In the description of the diffusion of light through the system, it is, however, still further

implied, that the earth, if not the sister planets, underwent that change which occasioned the succession of night and day, and the separation of light and darkness. “ And God saw the light
“ that it was good : and God divided the light
“ from the darkness. And God called the light
“ day, and the darkness he called night. And
“ the evening and the morning were the first
“ day.”

On substituting the real for the apparent effect, in this description, according to the principle previously laid down ; that change is necessarily implied, by which the earth acquired its diurnal revolution, whereby every part of it is brought successively under the same celestial meridian. For thus only could the opposite phenomena be produced, which are experienced by the natural day, as it assumes the contrary garb of darkness and light, in passing from morning to evening ; from this change alone it results, that the sun at its decline, is observed to subside in the western sky, and, after disappearing for the night, is again observed to rise from the dawning horizon.

The effects to which the sacred historian limits the operation of the first day are but two, which are described by him with the utmost conciseness. The field of our inquiries is, unfortunately, not more narrowed by the brevity of his description, than by the uncertainty

and imperfection of the science from which it might be supposed to derive illustration. Notwithstanding the assistance which our sight has derived from optics, and the insight which chemistry has given into the operations of nature ; we are assured, that every discovery of science has but tended to involve the inquiry respecting the nature of the sun, and the source of its heat and light, in more impenetrable mystery.

On the dissemination of light itself, considered independently of its motion and supply in the sun, philosophers are unhappily divided in opinion. The question respecting the mode of its propagation has given rise to conflicting theories, which stand in the awkward, though not very singular, predicament of being supported on nearly the same grounds of reasoning and evidence, and of being admitted by authorities, which, in point of weight, are very equally balanced. If we may, however, admit with the partizans of the undulatory theory, who suppose it is produced by *motion* communicated to a subtle element which they term ether, and by which they conceive all space is filled ; the connexion which it is thus assigned with the most *universal substance* dispersed through the universe, and with the most *general properties* discoverable in nature, establishes its intimate alliance with the primitive elements of the creation. The high place which we find it assigned in the

Mosaic cosmogony derives from this consideration no small illustration.

However the difficulties, in which the inquiries into the nature and propagation of light are embarrassed, may preclude our coming to any definite conclusion upon its origin; the phenomena, for which a favorite science professes to account, and from which the consideration of light and heat is inseparable, have been applied to account for the rotatory motion of the earth; which engages our present attention and into which we have just observed the natural appearances must be resolved, which are described as resulting from the change effected in our earth on the first day of the creation. If an electric stream is directed against the poles of a globe which is magnetised like our earth, and constructed to revolve freely on its axis; a rotatory motion is not merely communicated to it, but in the direction from west to east, which all the planets as well as our earth are observed to follow in their diurnal revolution. Of the science from which this analogy is supplied, it is remarkable, that it furnishes a striking example of the tendency of inquiry to end in the discovery of first principles, which are as simple in their nature, as general in their application. The intimacy subsisting between light and heat is not to be disproved, by the dexterity of the manipulist, or discriminating subtilty of the phi-

losopher: and through heat, as the antagonist force to *gravity*, its alliance is established with that property of nature, which of all that are known, is perhaps the best entitled to be conceived universal. If, as we are assured, these subtle agents of nature produce these effects by the intervention of an elastic fluid; the conceptions which we are enabled to form *à priori* of the works of nature, and the deductions at which we arrive *à posteriori* by science, justify us in forming this conclusion:—That when abstracted from the peculiarities of physical operation, which arise less from the power that acts than from the body acted upon, the agency through which, not only the secrets of electricity and magnetism are produced, but of gravity and heat, of attraction and repulsion, of cohesion and dissipation, and of whatever physical principles that may have been originally employed in constructing the frame, and may be still used in maintaining the economy of nature, will be with most probability referred to that subtle medium, of which light in a more eminent degree evinces the presence and manifests the operation. Those who may hesitate in adopting this conclusion may be atleast induced to admit, that the mystery in which the nature of light is by the confession of philosophers still haplessly involved, affords some justification, of the early attention bestowed on it in the record

of the Creation, and of the immediate cause to which it is referred, in being ascribed to the direct intervention of the Divinity.

Nor is it of small importance, that the act of creation by which the succession of day and night was produced, is described as constituting the operation of God on the precise day, when the particular form was imparted to the earth, which it is proved nearly to possess by actual measurement. From the act which was necessary to produce that effect, the present form of the earth would have naturally resulted. By presenting to a point in the heavens every part of a fluid body, like the earth in its chaotic state, in that succession which was necessary to effect the vicissitude of morning and evening, of day and night, it would acquire that revolution round its axis, of which its present figure, distended at the equator and compressed at the poles, would be the physical consequence. For in delivering ourselves with reference to the formation of the earth, this point may be insisted on, in stating the analogies by which Revelation derives support or illustration from Science.

III. In the description of the fourth day, the main astronomical difficulties occur, with which the Mosaical cosmogony appears to be embarrassed. By the operations of this day, which happened in the middle of the period devoted

to the history of the Creation, the boundary is marked between the production of the animated and the inanimate parts of nature. On the three days which preceded, as the sacred record principally describes, how the earth was reduced into form; on the two which succeeded it recounts, in what manner it was enriched with the wonders of the vegetable and animal kingdoms.

Difficulties have been raised as to the extent of the operations of this day; some expositors, looking back to the works of the preceding days, having imagined that it is confined to the changes effected merely in *the earth*; while others, insisting upon the previous notice of the production of light, and the explicit mention of *the sun and the stars* upon this day, have conceived that it comprises the whole planetary system of which the sun is the centre.

The latter supposition has been, however, already confirmed, from the explicit language of Scripture, as corroborated by the analogy of Science. The creation of the “heavens” being a part of the divine operations, upon the six days dedicated to that purpose; and the seven spheres which constitute the planetary system, being comprised under that term; the central body, on which they depended not only for motion but for light and heat, must have been necessarily included. As far as the speculations

of astronomers extend, they tend, as we have already seen, to confirm the same conclusion ; since they find it most easy to account for the origin of the system, by supposing the whole of the heavenly bodies, of which it consists, as formed at nearly the same period.

But this conclusion admits of direct establishment from the sacred historian ; from the most cursory view of the narrative it is no less apparent, that the creation of the sun and moon cannot be excluded from the operation of the first four days, without offering a considerable violence to his language. Of the moon, which stands in the particular relation to our earth of being its satellite ; there can be no room to doubt, that it was formed at the same time as the planet of which it is the constant attendant. In the same terms in which it is mentioned in the inspired text, the rest of the heavenly bodies are noticed. To maintain, that the historian delivers himself with a different sense, when he declares, that “ God made the earth and the “ moon,” and that “ he made the sun and stars,” would be to transgress not merely the precepts of sound criticism, but of candid construction. The obvious signification which is expressed in our vernacular version is accordingly supported by the common suffrage of translators ; and the great body of commentators have fully acquiesced in their sentence.

From the general tenor of the sacred historian's description, no less than his specific mention of "*the sun, the moon, and the stars,*" it must be therefore concluded that the whole of our system was produced at the same time, and by the same act of almighty power. That the formation of the mass of the sun had commenced previously to the fourth day; that from the first day, when the divine mandate went forth, "Let there be light," that body which is to our system its source and fountain had begun to exist; and that until the fourth day, when we are assured it was positively made, it had proceeded at an equal pace with the formation of the earth and moon; is plainly to be inferred from the order assigned to the progressive work of creation. It has been accordingly inferred, from the operation of the first day, not less by Christians than Jews, that the glorious body from whose atmosphere light is directly an emanation had, on that day, begun to exist. That on the fourth day, it acquired its proper place and office, the plain declaration of the inspired text seems to set beyond controversion. "And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also. And God set them in the firmament of the heaven to give light upon the earth, and to rule over the day and over the night, and to divide the light from the

“darkness: and God saw that it was good.
“And the evening and the morning were the
“fourth day.”

To attain to the full import of these words, which are directly explained with reference to “the greater light which ruled the day, and the “lesser light which ruled the night;” we must apply to them that principle of interpretation of which I have engaged in the defence, and accordingly substitute the true state for the obvious. As the supposed motion of the *sun* depends upon the real motion of the *earth*, these phenomena, according to the spirit of the rule, should be substituted for each other. When the general language of the historian is thus reduced to the technical precision of the philosopher; what is related by him of the *apparent motions of the sun* and moon, must be necessarily understood of the true revolution of *the earth* and its satellite.

The object of the Creator upon the fourth day is represented in the preceding passage of Moses to be the distinction of time and season; the determination not merely of the day and night, over which the two great luminaries preside, but the distribution of the months, periods and years, which are measured by their apparent motions. As we are taught by science, that these phenomena depend on *the annual revolution of our planet* with its attendant the moon,

and on the degree of the inclination which its axis preserves, to the path prescribed to it in the heavens ; they alone can afford a clue to the right comprehension of the Divine operations, which assigned the sun and moon their place and destination in our system.

The different works ascribed by Moses to the Creator, on the first and the fourth day, afford each other mutual illustration. His allusion to the division of the darkness from the light, which he represents as alike effected upon both days, naturally leads us to infer, that the operations of those days were in some measure connected. The earth, as we have observed, had commenced, from the first day, its diurnal revolution. And there is reason to conclude, that, from the close at least of the same day, as soon as it had fully assumed its present oblate form, it had also commenced its course in its orbit, though varying considerably from the path which was then assigned it. Had it not been thus impelled in its course, by the operation of those laws which we now know to be universal, and cannot reasonably suppose to have been suspended at the time, it must have been drawn to the centre of the system, and finally absorbed in the mass of the sun. From the double motion, diurnal and annual, however, in its orbit and on its axis, with which we thus suppose it had been already endued, the vicissitude

of the year enjoyed by the antediluvian world would not be necessarily produced. Its path might have not only deviated altogether from that of the other planets, but its axis have been so much inclined to the plane of its orbit, as to have subjected the primitive inhabitants of the globe to the severest extremes of season and climate; rendering the heats of summer as oppressive, as the colds of winter intense. Instead of that equability and mildness of temperature, of the enjoyment of which by the patriarchs their longevity affords no inconclusive proof; the antediluvians would have been exposed to all the rigors of variable and inclement seasons, which would have subjected them to privations and hardships, that would have reduced their lives even below the natural standard of human existence.

If these considerations may be applied in explanation of the inspired text, it may thence be safely inferred, that the operation of the Divine Artificer, on the fourth day, consisted in reducing the orbits of the earth and moon to the proper inclination with reference to each other and to the sun; and in assigning to the axes of both their proper inclination with reference to the plane of their orbits. The effects of this disposition would be the determination of the visible place and motion of the sun and moon, as regarded from the earth, according to the

statement of the inspired historian. And those changes in their apparent course would consequently ensue, which would secure to the days and nights their due length and succession, to the months and years their stated order; and effect all the vicissitudes by which the course of time was determined at this primeval period.

Nor is there any difficulty, of consequence, implied in the description of the operations of the fourth day, which this explanation of the phenomena to which they may be reduced, will not fully satisfy. Thus it implicitly appears, the sun had its visible place assigned to it, as we are expressly assured, the moon had its real course and object prescribed to it in the heavens: and on the apparent motions of these luminaries, the perennial changes depend, which constitute the subject of that description. On discriminating more minutely between the operations of the first and the fourth day, it may be also inferred, from the analogies which have been traced, that upon the latter day, the whole solar system was reduced into order; and that every planet became sensible of like effects, and was subjected to laws similar to those, which the earth and its satellite then first experienced. For this inference seems to follow not unnaturally, from the consideration that the “heavens, the sun and stars” are not only as-

cribed a place in the inspired narrative of the Creation, but are described in terms not essentially differing from those applied to “the earth” and “the moon:” of which there can be little reason to doubt, that they were at the same time brought into being.

IV. In the science, however, with which we are immediately engaged, not only the frame and constitution of our system, but the motions of the heavenly bodies, with reference to place and time, may be absolutely determined. Hitherto our course has proceeded on the shifting sands of hypothesis, and with no surer guide than conjecture; but here where the boundary is marked between the pure and physical astronomy a way is opened, on more solid ground, and under the steady light and direction of science. The places of the great luminaries, which were appointed to measure the course of time may thus be accurately determined, at the date of the Creation, by astronomical computation. It may be thus demonstrably proved, that they occupied, at that epoch, precisely those points of their orbits, by which the commencement of *time* and *motion* is properly marked. Here consequently, where the order assigned to those bodies, by the sacred record, exactly accords with that which is established by science, the rule of analogy strictly applies. As a coincidence so extraordinary, which can-

not recur but after the lapse of immeasurable ages, cannot, of course, be deemed accidental; it affords no inconclusive test, by which the historian's pretensions may be tried, who professes in his communications to speak by Revelation.

As preliminary to the establishment of this extraordinary fact, that the epoch of the Creation precisely coincides with the commencement of time and motion in our system, I may be allowed to assume, what may be easily proved, that the date of the event is accurately fixed in the most highly reputed system of Sacred Chronology. It may be equally granted me, upon the same conditions, that the meridian of Paradise, according to which the succession of evening and morning, of day and night, was determined, must have passed over a region, situated near the source of the Euphrates and Tigris. On computing the course of time from these premises, the two bodies which were appointed to measure its progress, are referred precisely to that place of appulse from whence the succession of time and motion, as already intimated, must be deduced.

1. In order to form any just ideas upon this subject, we must conceive the earth's orbit, as divided into four parts, by the points which are termed cardinal, as determining the seasons, by the entrance of the sun into them, at the four

quarters of the tropical year. Whatever be the season in which the year is supposed to begin; at its commencement, the sun must occupy one of these points; and on fixing its beginning with the patriarchs in autumn, it must have been consequently found in the equinoctial called after that season. But besides those four points, deduced from the tropical year, four others must be conceived, at the extremity of the greater and lesser axis of the ellipse which forms the earth's orbit; and which may be termed anomalistic, from the species of year that bears that appellation. As in these last mentioned points, the character of the sun's apparent motion is wholly changed; being in the excess of slowness or rapidity at either extremity of the major axis; but equable at that of the minor; in one of these points we must naturally look for the place where its *motion* commenced.

At the epoch of the Creation, it however appears, those points, which are not only unconnected but have a proper motion that disposes them constantly to recede from each other, were precisely coincident. It has been observed by Laplace, and had been previously discovered by Kepler, that at the date of that event, as historically determined, the extremities of the major axis of the earth's orbit, and the equinoctial points exactly coincided. As from that epoch, before which nothing terrestrial existed, we ne-

cessarily compute the beginning of time and motion on the earth; and, as we have already intimated, from the sun's entrance into those points, the commencement of both must be equally reckoned; we have so far a proof from astronomy, that at that epoch precisely they entered, in common, on their career. And what renders the coincidence, on which this observation is founded, more conclusive is, that when it has once occurred, it cannot happen, but after the lapse of ages almost incalculable. Such are the irregularities to which the sun is subject, in time and motion, arising from the difference between his tropical and anomalistic revolutions, that an immense period must intervene, before the years so designated can acquire a common commencement.

To set this argument in a more striking light, and better adapted to the views of astronomers, it may be further observed, that if there has ever occurred any *time*, when every anomaly in the sun's periodical motion is found to have vanished; that consequently must be the conjuncture, in which its revolution must be naturally conceived to have commenced; or, what is in effect the same, that from which we must properly date its creation. Astronomers, however, well know, that such a conjuncture could have only occurred, when the apsides coincided with the equinoctial points; as it has been al-

ready observed they positively did, at the epoch of the Creation. The sun, as they are well aware, on entering those points, has no latitude nor longitude, no right ascension nor declination, no difference of mean and true anomaly, and of course no equation of the centre. And consequently, the goal of his career must be here placed; unless we are to impute to design the anomalies in his motion, and to chance their final adjustment. And from the very slow revolution of the apsides and equinoctial points, it is equally known to them, that, when these points have once coincided, an immense period of time, far exceeding that which our earth can be supposed to have existed, must elapse, to render them again concurrent. As these are astronomical coincidences, which, they must be equally aware, the state of science in the age of Moses rendered it impossible to compute; it may be easily calculated, whether in fixing the date of the Creation, in the year in which they concur to verify his accuracy, chance merely determined his choice of it.

On considering, in the next place, the peculiar *motion*, with which the earth was impelled in its orbit; it is marked by characters of fitness and probability, not less extraordinary than those by which the *time* of the coincidences hitherto observed was distinguished. The respective extremities of the major and

minor axis have been already noticed, as the points where the first impulse may be most naturally conceived to have been communicated to our planet. In the choice, however, which those four points in its orbit present, the inferior apsis, or perihelion, in which it was really placed on the second day of the Creation, has claims to the preference ; as best calculated to originate the peculiar motion with which it proceeded in its orbit. For had this motion commenced at either extreme of the minor axis, where the balancing forces, by which it is maintained in its course, are equal ; its orbit could not have attained its present form ; it must have been then circular, whereas we know that it is elliptic. Of the two apsides, where it must be consequently supposed to have originated, the physical conditions of the problem, and to such our present consideration is confined, seem plainly to determine in favor of the minor, or perihelion. For, if the earth had been created in the aphelion or opposite point of its orbit ; the secondary causes, which, according to the postulate on which we reason, were employed in producing it, as we know they are employed in preserving it, must have been diminished, in proportion to the relative distance of the sun. For, upon the comparative heat imparted by it, the temperature necessarily depended, which not only gave consistency to our earth, but was

requisite to the production of the vegetable, and even to the sustenance of the animal kingdoms. From that point of its orbit, where the temperature was at the highest, it is therefore most reasonable to conclude, it would be projected ; and with an intensity of force, adequate to counteract the greater attraction resulting from its nearness to the centre of motion. In this point of its orbit, precisely, where the projectile force, as the attractive, is most intense, and where these antagonist forces are so adjusted as to determine the present elliptic form of its orbit, it is found by computation to have been actually placed, upon the day, on which, according to the sacred records, the first impulse was given to its motion.

2. In pursuing these observations further, to the consideration of the computed *place* of the *two luminaries*, by which the commencement of the year and the months was determined ; the conclusions to which they lead are not less corroborative of the inspired narrative. The week employed in the Creation being ascertained by the true time of the equinox, to which it is referred by the common consent of chronologists ; the sun and moon should be not merely at that time found, by calculation, to occupy precisely the place in which the sacred record supposes them situated ; but under such peculiar circumstances as fitted them for marking the com-

mencement of each of the periods which they were intended to measure. Now, the beginning of the *year*, as traditionally received from the patriarchs, is dated from the entrance of the sun into the equinox of autumn. The beginning of the *month* is equally reckoned from the first appearance of the new moon; which is described by the Hebrews as taking place the second day from the conjunction. We are besides informed by the inspired historian, that this appearance first occurred upon earth, on the *fourth* day of the week. For such is his express declaration;—after stating, that “God said, “Let there be lights in the firmament of the “heaven to divide the day from the night; and “let them be for signs, and for seasons, and for “days, and years,” he directly adds, “and God “saw that it was good; and the evening and the “morning were *the fourth day*.” The limits for verifying the truth of the sacred narrative in fixing the place of these luminaries are thus sufficiently contracted, to disprove/the supposition, that it is accidentally true; as the conditions of the question require not merely that they should be conjoined, on the day of the equinox, but that the new moon should have appeared to the earth on the fourth day of the week, in which the luminaries were thus peculiarly situated.

With a conjuncture thus singular, the position of those luminaries, however, coincides, in

a manner not less extraordinary, than has been already observed of the earth, at the same remarkable period. From a proleptical calculation of their places, it appears, that on the second day of the week the sun not only entered the equinox, but that upon that day, and in that point of the heavens, it was conjoined with the moon; and consequently, that upon the fourth day, as described by Moses, the crescent first appeared to the earth, and determined the commencement not only of the month but of the year. For the Jews have justly decided, that before this day, when the luminaries, if not created, were specially appointed to mark the divisions of time, its commencement cannot be strictly and properly dated.

On connecting these observations with the preceding remarks, it will be readily acknowledged, that no day can be pointed out more suitable than the second, for the circumstances in which the two great luminaries are placed, as conjoined in that point of the heavens where the inferior apsis and the equinoctial point coincided, and from which the beginning of time and motion must be computed. For the single revolution which our planet had performed, upon the first day, was necessary to reduce it to its proper form and consistency; the first impulse by which the earth and its satellite proceeded in their course through the heavens, as

imparted on the second day, consequently happened at the earliest and most suitable time of which we can form any conception.

Such are the legitimate criteria, which this most ancient science supplies, for estimating the truth of the divine record of the Creation: as contradistinguished from those which may be suggested by physical Astronomy. In their conclusiveness, they properly rest on the consideration of the immeasurable periods which are necessary to bring round such coincidences; and the infinite chances which are opposed to the solitary casualty of their meeting in a year, assumed on capricious or erroneous principles. Nor are the objections, to the admission of so irrational a supposition that such is the source of the agreement, confined to the difficulties attending the discovery of a conjuncture in which similar coincidences meet: in which, the earth, at the opening of the year, and on the second day of the week, was both in the equinox and perihelion, and having the moon conjoined with the sun, in so remarkable a point in the heavens, as that in which the apsides and equinoxes coincided. In distinguishing the precise time of the Creation, these coincidences are not more remarkable, for their fitness, as marking the commencement of time and motion; than for their comprehensiveness, as embracing every astronomical character, by which we can con-

ceive that epoch capable of being confirmed and illustrated. But the difficulties in which the subject is inextricably involved, by referring the solution to accident, atonce disappear on the mere supposition of fidelity, in the sacred historian, who is right in simply recording what really happened.

Nor should it be omitted, in justification of the claims of Moses, as professing to speak by inspiration, that the scientific analogies by which his narrative has been illustrated and confirmed, have been merely brought to light, by modern discovery. Those nebulous appearances of the heavens, from which the origin of our system has been explained, must have still escaped, as they ever eluded observation; had not the construction of the telescope been brought, within a few years, to an unexpected degree of perfection. From the extraordinary ardor with which every secret relating to the nature of the earth has been investigated; that knowledge of its external form and internal structure has exclusively arisen, from which the confirmation is deduced, that it assumed its present shape from revolving in a fluid state, and acquired its peculiar stratification in a great diluvian convulsion.

Nor is it of less importance to observe, that the learned and sagacious modern, by whom the system of ancient chronology has been most

ably digested, in investigating the epoch of the creation, has expressed his inability to discover any clue by which it might be established on natural principles. In determining it, on totally independent, and indeed on strictly historical, grounds ; all suspicion must be removed, that in his choice of the peculiar year, to which so many astronomical coincidences, as I have shown, conspire in fixing it, he was wholly uninfluenced by preconceived notions. That the evidence which he despaired of finding, should on investigation present itself, in the narrative of the sacred historian ; must surely convey a proof of the authority with which he spoke, on which it would be superfluous any further to dilate or comment.

LECTURE III.

2 PET. III. 3, 4, 5.

There shall come in the last days scoffers, walking after their own lusts, and saying, Where is the promise of his coming? for since the fathers fell asleep, all things continue as they were from the beginning of the creation. For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water.

IN the revelation, which it has pleased the Sovereign Ruler to deliver of his will to mankind, he has thought fit, to address himself to their fears, as well as to their hopes ; to stimulate their exertions, by the promise of rewards, and restrain their excesses, by the denunciation of punishments. When we turn from the written volume, in which his intentions are declared, respecting the destiny of those whom he has created for some wise and benevolent end ; and inspect the book of nature, which speaks to our reason in language, consonant to that in which the voice of inspiration addresses our faith : the contemplation of his works leads us to a conception of his nature, similar to that which his word is intended to inspire. From both, we collect,

that those attributes are blended in the divine character, which, if calculated to impress us with a confidence in his goodness, are fitted to strike us with a dread of incurring his anger. In the structure of the earth, which exhibits, not less clearly, those marks of wisdom and design which declare a divine contriver, than those proofs of a great convulsion of nature, in which its frame was shattered, we have evidence, that his goodness is not inconsistent with severity, as his mercy is not incompatible with justice. Those “scoffers, who in walking after their own “lusts,” sought to reconcile themselves to their profligate courses, under a delusive hope, that all things would proceed, as, they conceived, they had “continued, from the beginning of “creation,” while they rejected the counsel of God, might be confuted by the bare inspection of his works.

Such is the object of the Apostle’s denunciation, in the text; in the context of which we receive a further insight into the future destiny of the world. From the palpable evidence, which the face of nature bears to the Creation and the Deluge, as revealed in the inspired word, he appositely concludes, that they who derided the notion, that this earth was reserved for a greater and final catastrophe, should not find a palliation or excuse for their infidelity, in the plea of invincible ignorance. “For this

“ they willingly are ignorant of, that by the
“ word of God the heavens were of old, and
“ the earth standing out of the water and in the
“ water : whereby the world that then was,
“ being overflowed with water, perished : but
“ the heavens and the earth, which are now, by
“ the same word are kept in store, reserved unto
“ fire against the day of judgment and perdition
“ of ungodly men.”

In taking occasion from these words to inquire, how far the revelations, respecting the destiny of our earth, prove consonant to the decisions of science ; our investigation of the evidence and causes of the Deluge, must be reserved for future discussion. The subject of the Creation, to which immediate allusion is made by the Apostle in the text, demands that previous consideration, which is due to it in consequence of its prior occurrence. In the direct appeal which he makes to experience, our attention is directed for the discovery of those facts, from which our inferences may be deduced, to that science, which professes to determine the previous state of the earth by an inquiry into its internal structure. In entering on this investigation, after the consideration which has been bestowed on the planetary system ; the subject as it more intimately affects us, acquires an increasing interest. The vast talent, the unwearied ardor and industry, with

which it has been latterly cultivated, have indeed conferred upon it a reputation as splendid, as its origin has been sudden. And however time may tarnish its lustre, it cannot impair its claims to utility ; in having contributed to bring together a vast body of the most curious and important facts, which, with an unequalled labor and perseverance of research, have been collected not merely from every quarter of the globe, but drawn from its inmost recesses.

I. From the first and rudest essays of this science, some light may be drawn, in illustration of the doctrine to which the Apostle alludes in the text. It furnishes, even in the earliest state of its cultivation under the Vulcanian and Neptunian, proofs of the influence of those destroying elements, to which the inspired writer alludes, in effecting extraordinary revolutions in our planet. To the contrary systems which were atfirst maintained in Geology, by those philosophers, who discovered, in fire and water, the causes of the changes which the frame of the earth has sustained : a middle hypothesis has succeeded, in which it is with more reason supposed, that both those elements have contributed, though in different proportions, to reduce it to its present form. The examination of its internal structure proves, on the one side, the truth, and establishes, on the other, the possibility of the Apostle's declaration respecting its

destiny. The texture of its rocks, and the marine deposits which they contain, sufficiently prove, that the agency of water was once employed in its destruction; and the marks of the operation of fire, which are impressed, though less extensively upon its surface, afford an earnest, that this element may one day contribute to reduce it to a ruin.

By the explicit account which is given in Scripture of a Deluge, in which the time and circumstances of that great catastrophe are described, the simple fact is not merely established, that Moses was acquainted with that event, but the extent of his knowledge respecting it is disclosed. From the circumstance of his education in Egypt, it may be farther inferred, that of the subsequent catastrophe, in which it was supposed, it would perish by fire, he could not have been wholly ignorant. This opinion, which was ascribed to the native mystagogue Thoth, had prevailed among the order of priests long previously to the times of Moses. That the earth was subject to successive revolutions, from the agency of fire and water, was an opinion that was not merely adopted by the ancient people, in whose learning he was versed, but was generally received among all nations, who pretended to any knowledge derived from tradition. So universal has been its prevalence as to lead to the conviction, that it has been transmitted from

the small remnant of mankind, who escaped that cataclysm of which they preserved the remembrance. In attempting to account for those catastrophes on physical principles, the ancients have connected them with long periods to which they gave the name of Great Years; the revolutions of which would, as they supposed, effect a renovation of the world, through the agency of the contrary elements employed in its destruction. As these periods may be easily determined on scientific principles; in the remarkable epochs from whence they are deduced, we have an evidence of the antiquity of the doctrine of the Mundane Restitution, to which allusion is plainly made by the Apostle. We are thus enabled to trace it to a period antecedent even to Moses, and to identify it with the age of the Egyptian hierophant, whom I formerly mentioned; who was contemporary with Joseph, and was supposed to have received it traditionally from a mystagogue of the same name, who must be referred to a time which preceded the Deluge. It may be, therefore, safely inferred, that the Hebrew legislator could not have been ignorant of the doctrine of the periodical destruction and renovation of the earth, which once occupied so distinguished a place in the systems of the modern geologist. He has however declined giving it the impress of his authority. While he describes historically the previous catas-

trophe, in which it had perished ; he avoids all allusion to the expectation of its future destruction. And the notion that these revolutions would follow each other in endless succession he expressly denies ; in recording the divine promise, that it should not again perish by water. In recounting the express promise of the Almighty, he observes, “ Neither shall all flesh be
“ cut off any more by a flood ; neither shall
“ there be any more a flood to destroy the
“ earth.”

In the deficiency of evidence more convincing, these words may possibly be supposed to bear a tacit reference to several antecedent cataclysms, by which it is supposed, the earth has progressively advanced to its present state of improvement, in which it is fitted for the reception of animals of the most perfect organisation. It may be, I conceive however, inferred by a more legitimate mode of deduction, that allusion is made in it to the doctrine of that destruction and renovation, to which the Apostle has given his sanction : and an inference may be thence drawn, in favor of its high antiquity, as not merely antecedent to the times of Moses, but of Noah. In justification of such a conclusion, it may be further alleged, that while we have no scripture authority for admitting the arbitrary dogma of successive cataclysms, the doctrine of a successive

destruction by fire and water has been incorporated in the Christian code by the Apostles, and is corroborated by a tradition, that has been preserved among Jews and Gentiles ; which lays claim to so high an antiquity, that it professes to be descended from Seth or Adam. In its general reception among all mankind, no inconclusive proof is supposed to be implied, that it was included in the precepts, delivered by the patriarch to his sons, who survived the destructive effects of the deluge, and was by them transmitted to their descendants. This fact being admitted, with respect to the immediate survivors of that catastrophe ; and if it be disputed, the universal diffusion of the tradition will be encumbered with a difficulty, that will not be easily removed : the knowledge of the Apostolical doctrine, with which the Egyptians were beyond a doubt acquainted, cannot be denied to Moses. An adequate reason for his disregard of it, in his narrative, must be consequently sought in some supposition, different from that of his ignorance of this ancient dogma.

The geologist, however, in his notion of a succession of deluges, by an admission of which he alone finds it possible to account for the peculiarities in the stratification of the globe ; affects to discover some palliation of his arbitrary system, in the scheme of the sacred historian. In

the different stages of that development which he supposes this earth has undergone in successive creations and destructions, he conceives the Mosaic history may be limited to the latest, in which the earth was fitted for the reception of man, the most perfect of organised beings. In refutation of so unwarrantable an assumption, positive authority cannot be reasonably sought in the inspired writings ; as it is most unreasonable to expect, that a formal protest should be entered in the rule of our faith, against suppositions, which are so little calculated to influence our belief, that they are not qualified to operate on our rational conviction. If my own sentiments may be offered as any measure for the opinions of others, my deliberate judgment is, that the single passage of Scripture, which gives occasion to this discourse, is not to be reconciled with a hypothesis, which derives no support from fact, and little countenance from reason. The Apostle's words, in referring not merely to the creation of the earth, but specifically to "*the beginning of creation*," seem to include all time, from the first moment in which the world was brought into existence. His description of it, at that crisis, in representing it as in the situation of being "*out of the water*," while it receives a direct illustration from its present state, as distributed into land and sea, is not to be reconciled with a theory in which it is sup-

posed to have been wholly submerged, during the ages which were consumed in the progress of its development.

II. These expedients to reconcile the revelations of God to the vain imaginations of man, have proved so abortive; that recourse has been had to the hazardous experiment of seeking to identify the theory of the geologist in the description of Scripture. There are few systems, possessing sufficient plausibility to gain over proselytes, that do not contain some intermixture of truth with error. After the many interesting and valuable facts, brought to light by the diligence of geologists, it would be strange, had their labors not led to the deduction of some sound elementary principles. In the classification of rocks, according to their different *formations*; where this term is not taken as synonymous with creation, and understood with reference to an extended period of time; little appears which should give alarm or offence to the most rigid scripturist. In the modifications which this doctrine receives, from the disciples of the school in which this classification prevails, certain reserves are maintained, which though not expressly contradictory to the testimony, cannot be reconciled to the tenor, of scripture, without offering it an apparent violence. A writer deservedly of the highest reputation in this school, in closing his observa-

tions upon those formations, delivers himself in language, from which more light may be derived in illustration of this remark, than probably from the most labored comment. “In “ this long series of rocks,” he observes, “ this “ assemblage of monuments of different epochas, “ we distinguish chiefly three very striking phenomena ; the first dawn of organic life on the “ globe, the appearance of fragmentary rocks, “ and the catastrophe which has buried the ancient monocotyledon vegetation.” He concludes, however, with observing, “ The rocks of “ one epocha have always some prototype in “ the rocks of the preceding epocha, and every “ thing denotes the effect of a continued development.”

The condition of a *progressive* development, to which alone we have cause to object in this doctrine, is here very cautiously proposed ; though the author elsewhere openly asserts a succession of creations and destructions. In the work, in which it is rather gratuitously assumed, no effort is made to establish its truth upon evidence however slight ; while much labor is, on the contrary, successfully employed, to invalidate the slender proof on which it is commonly asserted. As preliminary to inquiring, how far it has the support of scriptural authority ; it may not be inexpedient to state it in detail ; for thus we may be enabled to judge,

how far its internal consistency may recommend it to our adoption.

In tracing the origin of those formations, on which the doctrine of a progressive development is founded, geologists suppose, that the earth had been for ages immersed in water. Long previously to the existence of the animal and vegetable productions with which it is now covered, it was the exclusive habitation of marine plants and animals of a rude and imperfect organisation. During the long period in which the waters thus prevailed over the surface of the earth, nature assumed a greater degree of perfection, as it was gradually developed. A race of zoöphytes took the lead in the scale of being; shell-fish and marine plants, of a kind with which we are now unacquainted, succeeded in their order: at a considerable interval from these, aquatic animals, of the same genus as those which are known to us, and still later, of the same species, followed in succession. When the earth was at length recovered from the dominion of the waters, land-plants sprang up, and still later than these, land animals made their appearance. The changes which nature thus sustained, were held to have occurred at distant epochs, and to have been effected by successive creations and destructions.

An equally bold and ineffectual attempt has been indeed made to identify the doctrine of

the progressive development of the earth, thus conceived, in the process of the Creation as described in "the Genesis" of Moses. On extending the Hebrew term signifying *a day*, to include a more enlarged period of time; a similarity has been found or imagined, between the organic development held by the geologist, and the progress of the creation, for the six periodical revolutions meant under that term, as described by the sacred historian. Were this criticism as just as it is refined, it would be found too slender to bear the weight of the consequences which it is intended to uphold: it is, however, unhappily philologically unsound. The idiom of the Hebrew will not warrant the extension of the term "day" in the required sense. Were not its meaning fixed, by the opposition marked in the context, between it and the term "year;" it might be determined, from the distribution of the time which it expresses into "morning and evening," and from the use of the term expressing that time in the institution of the Sabbath. The doctrine of a progressive development, as maintained by the mineral geologists, whatever be its conformity to science, may be thus far regarded, as deriving no countenance from scripture.

A remedy for every difficulty, thus occasioned by the opposition of science to scripture, has been, however, discovered in the commencing

sentence of the same book of Moses, when regarded under a new construction. By a trivial change in the force of a tense and conjunction, an opening, it would appear, may be made of capacity sufficient to contain the ages consumed in this progressive development. Instead of the common version of the passage, we are accordingly informed, that it should be rendered with a disjunctive, instead of a conjunctive, particle. "In the beginning God created the "heaven and the earth. *But* the earth was "without form and void." The clause, thus disjoined from the narrative which succeeds, being referred to a period antecedent to the Adamite creation; in it those changes in the earth's structure are supposed to have occurred, on which the doctrine of its progressive development is founded. But notwithstanding the address, with which the context may be thus severed, the connexion is restored in the course of the narrative; the difficulty reappearing in the opening of the following chapter, for which no change of construction will furnish a remedy. In the one place the text runs in these words, "In the beginning God created *the heaven and* " *the earth;*" in the other, the creation is plainly limited in time, by the terms of the comment: "these are the generations of the heavens and "of the earth when they were created, *in the day* "that the Lord God *made the earth and the hea-*

vens.” Were this passage ambiguous, its sense might be determined by the institution of the sabbath ; with the record of which it is directly preceded : it places beyond the range of cavil or dispute, that the time of the creation was not distributed into years or ages, but days ; and that of these, it did not even extend to the seventh.

Let not the geologist then amuse himself with the belief ; let him not abuse the credulity of his hearers, with the pretence ; that, on the doctrine of a progressive development of the earth, the Scriptures are silent or neutral. Without insisting on the impossibility of reconciling the belief, on the one side, that the earth has been but once created, with the notion, on the other, that it has been often created and destroyed ; between the time consumed in the one act, and that necessary to consummate the other, the contradiction is so irreconcilable, that truth being admitted to exist on either side, the opposite is unavoidably convicted of error.

III. It is of importance to the interests not merely of philosophical but of religious truth, that a question, which stands thus at issue, should be brought to a satisfactory conclusion. On the determination of this point the consequence depends, whether the inspired narrative, in which we are assured that there has been but one creation, be analogous to the text which

still lies open to our inspection in the book of nature ; from an examination of which a groundless assurance is derived, that it has undergone several creations and destructions.

The obligation cannot be deemed unreasonable, in which it is made incumbent on the disciples of science, that in standing opposed to the truth of revelation, they should be consistent in their opposition. In the question before us, the leading schools of geology are, on the contrary, not merely committed with religion, but with each other. So far from coinciding in the conclusion, which appears at variance with the inspired text, they are not even agreed on the principle, by which the truth may be elicited, by any method of inference. It is indeed curious to observe, how effectually the reasoners, with whom we are at issue on this subject, refute one another. On the one side, we are informed, on the matured experience of the French school, that “ were it not for the extraneous fossils, it never could have been ascertained from the formations themselves, that they were not simultaneous.” On the other side, we are assured, on the more extended experience of the German school, that “ nothing proves the succession of organic types necessarily coincided with the periods assigned to each formation.” While the reasoners who are thus irreconcilably opposed, so effectually sap the ground on which

they respectively stand; what foundation, may we ask, is left whereon we may ground our conviction? If they respectively find so little cause to be satisfied with each other's reasonings; what, may we beg to know, entitles them to greater respect from their common readers?

That the scepticism, however, which is expressed on both sides, is justly founded, admits of being easily substantiated. The criteria whereby we are assured a judgment may be attained of the epochs of the different formations are reduced to three; their relative position, their mineralogical composition, and the extraneous fossils which they contain. By the test thus proposed, the point in dispute consequently remains to be determined.

Let it then be admitted, in the first place, that those formations maintain a conformity to the position which they were assigned at the creation, or have since been displaced from it by some disturbing agency; the infinite power of the omniscient Disposer renders any attempt to determine the exact order or method of their disposal, by the calculation of natural forces, not only profane but irrational. And to this difficulty, our inquiries into the subject, whatever be the skill or labor with which they are conducted, must necessarily return. For on considering the surface of the earth in the last stage of development; it cannot be supposed

to have arrived at it, by a displacement or transmutation of the common materials of which every antecedent formation is composed : as in that case, instead of the three which are recognised in both schools of geology, we should merely have one, or the ruins of several. If therefore, it be conceived, (as is indeed implied in the notion, that the development is progressive,) that they have originated in an accumulation of additional matter upon the old ; we are naturally led to inquire, from whence may it have been acquired ? Thus are we unavoidably led to the admission of a creation : to which our reasonings must ultimately revert in this hypothesis, whatever be the course in which we prosecute inquiry. And the admission being made ; as the work of formation is directly referred in it, to the Divine Architect, by whom the universal frame has been constructed ; what conjecture can we pretend to make of the manner in which the work was performed ? In the variety of suppositions, in which our weakness or vanity may induce us to indulge on this subject ; that in which it is imagined, that He rather produced them simultaneously than successively, seems, atleast to our weak capacities, to be most consistent with his power. In this supposition, however, the notion of a progressive development, and even of a succession of formations, is necessarily and fundamentally subverted.

It is difficult even to conceive, in the next place, what inference can be deduced from the mineralogical composition of rocks, that at all bears upon the subject before us; if we except the obvious cause which it assigns for the absence of fossils, or their presence in those rocks, in different proportions. By this criterion which is proposed for judging of formations in general, we are thus virtually led no farther, in determining their origin, or the time and order of their succession, than we are conducted by the simple fact, that they possess, or are destitute of organic remains.

When the chemical constituents of the fossils themselves, and of the rocks in which they are inclosed, are considered; it enables us most simply, and of course most satisfactorily, to account for their preservation or destruction, whatever be the time at which they may have been embedded. We know that a chemical action prevails through the domain of nature to an indefinite extent; and that by an affinity, attraction, or secret combustion, the constituents of matter adhere, or are subject to modification and decomposition. We are besides assured, that a relation is generally observed to exist between the composition of the rock and the fossil which it contains; that bones and shells are preserved in calcareous beds, and vegetables in argillaceous; that fossil wood abounds in coal

deposits, and their accompaniments, from which shells are generally observed to be absent. I would therefore ask, on what sound philosophical principle we are warranted in looking beyond the chemical action, by which the fossil and its rocky bed have been consolidated, for the preservation or the destruction of any organic remains; on the absence or presence of which, it is notwithstanding pretended, that the age of a rock may be determined?

These considerations will adequately shew, without reference to the preceding authorities, that the objectors to the evidence, on which the age of any formation is determined, are justified in doubting its conclusiveness. The violation of every principle of legitimate reasoning, with which the conclusion of the theorist is deduced, scarcely needs an exposure: the antiquity of the formation being gratuitously assumed, or the proof of it circulating in a sophistical deduction either of the date of the fossil from the age of the rock, or of the age of the rock from the date of the fossil. No position can be, on the other hand, more fully conceded, than that the earth, after the most careful examination of its structure, affords no criterion, by which the epochs of its stratification can be conjectured. A geologist, whose experience extended to the old and new world, and who speaks from an examination of the rocks of both hemispheres,

frankly avows, that “there may be identity of mass, and diversity of fossils, and diversity of mass, and identity of fossils ;” and that in judging of the age of their production, “nothing gives an absolute measure of time.” This concession being made, there can be little ground for prolonging the discussion ; the point being thus left equally undecided, whether the date of any formation should be referred to the deluge that last occurred, or to any that may be gratuitously supposed to have preceded.

The notion of a progressive development of the earth by successive creations and destructions, must be therefore rejected, as not entitled to more serious respect, than any mythological fable which professes to account for its origin. The builders of the fiction, in heaping rock upon rock, while they obtrude upon the province of the Most High, as they emulate the ambition, have but attained the success, of the earth-born giants ;

*“Οσσαν ἐπ’ Οὐλύμπῳ μέμασαν θέμεν, αὐτὰρ ἐπ’ Ὀσση
Πήλιον εἰνοσίφυλλον, ἔν’ οὐρανὸς ἀμβατὸς εἴη.*

For one Creation only, have we authority from science, as well as scripture, and as I shall hereafter have occasion to show, for one Deluge ; of which particular mention is made by the Apostle. But the mystery which hangs over the first formation of our earth, is involved in greater obscurity, by the effects of the great cataclysm, in which he declares “it perished.”

Some insight into its origin is indeed opened

to us, in the narrative of Moses. But his description is necessarily general, and confined to the disclosure of a few facts; and the evidence which the earth exhibits, of a frame shattered by a great convulsion of nature, renders any positive decision upon its antecedent, from its present state, more than hazardous. We are assured, on the authority of inspiration, that it originated in a chaotic mass; that on the second day of its creation, its atmosphere was formed; and that on the third, it was divided into land and water. But of the process, by which these wondrous changes were effected in so short a time, it is beyond our power to form any adequate idea.

The supposition, however, being admitted that natural causes were then in operation, (and exclusively on this assumption my argument is conducted;) the process of the Creation, as described by the Jewish legislator, may be explained, if not in conformity to the precision, without violating the analogy, of science. In engaging in this attempt, I shall be I hope acquitted of the presumption of pretending to determine the course pursued by the Omnipotent who was unrestricted in the choice of his means: my observations are offered merely as conjectures; and simply declare what I conceive to be philosophically possible, not what I hold to be literally true.

IV. Of the secondary agency, which was em-

ployed from the beginning of time, I formerly intimated, that *electricity*, in the most comprehensive sense, may be included. The intimate connexion, between this great agent and our planet, fully appears from the constitution of the earth, as the vast magazine in which it is repositied; and into which it endeavours to escape, when the balance is disturbed, with which, it is distributed through nature. In the same observation, and under the same term, *magnetism* may be included; as a branch of the same science, and in its theory reducible to the same principles. The earth has in fact the nature of a magnet, and as such is capable of imparting its magnetical properties to metallic bodies. In electrical operation, *chemical agency* is likewise necessarily implied; the affinities of bodies depending upon their electrical states, and their decomposition being affected by its operation. The connexion which the subtle fluid, endued with powers and properties thus extensive, possesses with *light* and *heat*, is not less deserving of observation, as tending to identify the physical forces which might have been employed at the creation. By the agency, peculiar to the branch of the science termed the hydroelectric, a *light* of unequalled intenseness and brilliancy may be produced; and a *heat* may be excited, that exceeds all which can be produced by any artificial process. In that branch which is contradistinguished as the ther-

moelectric, it appears, that by heat alone the electrical fluid may be evolved; as it is in the galvanic, by the force of chemical attraction. Currents of the former kind are excited by the solar rays, acting on the extensive surface of the earth, and producing considerable variations of temperature in the atmosphere; these have an effect on the superficial strata, where the combined influence of heat, air and water are constantly exerted. The internal regions, likewise, give no less evidence of similar currents continually circulating through them; and the metalliferous veins prove, that in them considerable electric forces are in constant operation.

If physical causes are at all admitted to have conspired in the formation of the earth; the agency which operates thus extensively upon it, cannot be supposed to have lain dormant at its creation. It is declared in the sacred record, that it first existed in a fluid state, and its spheroidal form, as I formerly observed, brings confirmation from science, in support of the assertion. If we may assume, that the physical agency,—of the operation of which throughout the domain of nature, we have lately observed the extent,—had any influence upon the earth; few difficulties occur in the account of its origin, for which it is not calculated to offer a satisfactory solution.

When it was first discovered, that by the ap-

plication of the hydroelectric agency bodies might be reduced to their elements; the experiment was made upon neutral salts, in a state of solution. In the decomposition which ensued, the fluid was reduced to its first principles; where the oxygen was evolved the acids were accumulated, and where the hydrogen was extricated, the bases, whether alkaline, metallic or earthy, were deposited. Those who may dispute, that the saline solution on which the experiment was made, was analogous to the fluid with which the globe was originally overspread; can entertain no doubt that the agency by which the decomposition was wrought is not more competent to produce such effects at the present day than it was at the creation. They will at least admit, that the deposits into which the compound was reduced, as earthy and metallic, form no inconsiderable portion of the matter which composes the superficial strata of our planet.

1. If we proceed, from considering the constitution of the earth, to contemplate the changes to which it was subjected, during the first six days employed in its formation; by supposing the same agency to have been in operation, every apparent difficulty disappears in the record of its creation. On this principle, the work of the first day, which was distinguished by the production of light, has been already illustrated.

To the same agency the diurnal revolution of the globe, by which “light was separated from “darkness,” and “day distinguished from night,” has been also deduced : an adequate cause for its rotation on its axis, from west to east, being assigned in the supposition, that its magnetic poles were subjected to the influence of an electric current.

In the infancy of geological science, its first cultivators adopted the opinion that the axis of the earth received, at the creation, a perpendicular position, but became at the deluge inclined to the plane of the ecliptic. While it retained that position, a perennial spring would be preserved to the regions of the temperate zones ; with an exemption from those extremes of temperature, on which the inclemency of season and weather are dependant. Thus might every difference, that existed, previously and subsequently to that crisis, be satisfactorily explained, as they supposed, upon physical principles.

It must be allowed in justification of this hypothesis, that the assumption on which it is founded derives some countenance from the scripture account of the distribution of the year, at both those periods. In describing the division of time, at the earlier period of the creation, no intimation is given, that it was then susceptible of the vicissitudes of season. Of the sun and moon, it is declared, apparently

with reference to the division of time, into days, months, and years, at that epoch, that they were “set in the firmament, to divide the day from the night and to be for signs and for times, and for days and years.” But in specifying the changes to which it was subject immediately after the deluge, explicit mention is made of “summer, winter, seed-time and harvest.” And the distinction, it is observable, first occurs in a promise given to Noah, that while the earth remained, the succession should not be interrupted. Such an assurance, however, must have been unnecessary to him, had he been already convinced by experience of the regular return of the seasons; particularly as he received a formal stipulation, under covenant, that another deluge should not occur; from which alone the prospect of their suspension was to be apprehended. To him, who had been, on the contrary, only accustomed to view, in the circling year the unvarying cheerfulness of spring, some assurance was necessary, that its suspension by the gloom of winter, as Noah was destined soon to witness, would not be protracted. As in beholding the temporary death to which nature was subject, at the decline of the year, he might naturally apprehend, that a severer destiny awaited the earth than that in which he had lately beheld it perish.

In support of this view of the scripture narra-

tive, not a little confirmation may be likewise deduced from science. The physical causes assigned for the rotation of the earth on its axis would imply, that the magnetic and the terrestrial poles at one time coincided : the distance by which they are now separated has been consequently referred to some disturbing force, which, without considerably influencing the internal nucleus, so sensibly affected the external orb, as to give the axis its present inclination. The form of the earth, as found by positive measurement to differ from a strictly oblate spheroid, is supposed to corroborate the same conclusion ; the irregularities in its shape being only explicable on the supposition, that its meridians are arcs of a double curvature, which acquired their form in consequence of a rotation upon different axes. And the physical causes, to which these phenomena are thus ascribed, fully coincide with the geological, to which the deluge has been imputed : in the course of which, it is conceived, the terrestrial poles shifted their position. For the volcanic explosion, which contributed to that catastrophe, and which extended its effects towards the poles, as it dispersed in that direction, the quantity of matter accumulated at the primitive equator, destroyed the equilibrium of the earth, and disposed it, in recovering it again, to assume a new axis of rotation.

Nor does this hypothesis appear to be ma-

terially affected, by the objections which are stated on the opposite side : that by the inclination of the earth's axis a necessary provision was made for the distribution of the solar influence to every part of its surface ; and that the waters of the ocean, however they might shift their bed, as deficient in quantity and specific gravity, when compared with the solid mass accumulated at the equator, would not enable the earth to maintain its equilibrium.

Each of these objections is, however, founded on an erroneous assumption. In the one case, it is presumed, against all probability, that the whole earth was inhabited before the deluge ; on which supposition alone, the necessity is grounded, that a provision should be made for the extension of solar heat to every region. Whereas if we suppose its distribution was regulated by the wants of the inhabitants, the advantage of those who preceded the flood, would have been best consulted, by that position of the poles, which ensured them the enjoyment of a perpetual spring ; as the benefit of those who have succeeded it, is best promoted, by that inclination of the axis, which occasions the vicissitude of the seasons. In the subsequent objection, the geological conditions are unfortunately excluded from the solution of the problem ; and the conclusion deduced from the physical alone, by which it cannot be accurately determined.

An inspection of the stratification of the earth is sufficient to prove, that not only the sea was displaced; but the land was disintegrated, and dispersed in a state of solution in water. As the mass accumulated at the primitive, was thus transferred to the present equator; it must have disposed the earth to preserve its new, not to resume its former equilibrium.

In advancing so much, in support of this hypothesis of the early geologists, I am bound however to confess, that it presents some geographical and astronomical objections which require to be cleared up, before it is entitled to our full concurrence.

2. The operation of the second day of the Creation consisted in the production of the atmosphere, with which the globe is surrounded. The sacred historian in describing its origin, seems to trace the process of its formation, in declaring that it was designed to “separate the “waters which were under the firmament, from “the waters which were above the firmament.” On considering the chemical components of the air, in following up this supposition, the mode of its production may be adequately explained, from the agency which may be conceived to have then been in operation. Of the three gases which enter into its composition, and which that agency would have tended to disengage, the definite proportions might have

been supplied from the decomposition of the waters spread over the globe; which deposited the earthy and metallic bases, that contributed to the formation of its more solid strata. While the heat which was exerted on its surface disposed the water to take a more elastic form and to ascend in vapor; the medium through which it rose became saturated with aqueous matter, until rising to the higher region, where the temperature was reduced, it was again condensed into water. By the atmosphere, thus interposed between the great reservoir of water in the sea, and the masses of clouds which were the depositaries of rain, the description of the sacred historian may be easily understood, in speaking of the firmament, or expanse, that separated the higher and the lower waters.

Although the hypothesis of the early geologists on the perpendicular position of the earth's axis had its use, in solving some of the difficulties in the state of the primitive earth; it is, however, not necessary to their removal. Were it, indeed, once admitted, the unruffled serenity of the antediluvian skies, which necessarily contributed to the salubrity of the atmosphere, would follow as a consequence to which no physical objection would be apparent. The influence which the sun possesses, in changing his declination as the seasons vary, to disturb the equilibrium of the atmosphere, must have

been wholly unknown ; its calmness could not be ruffled by equinoctial hurricanes, nor its temperature destroyed by the extremes of tropical heat and cold. Nor could any of those temporary effects of heat have been experienced ; which, in rarefying the air of different regions, and disturbing the balance of that elastic fluid, lead to the violent results of storms and tempests, of which it is at present susceptible.

Although it should be, however, fully conceded, that the antediluvians did not enjoy a perennial spring, but possessed a year which was subject to the variation of season ; it is perfectly compatible with such a concession to suppose, that they possessed an uniform serenity of sky and purity of atmosphere, infinitely surpassing that which is at present enjoyed by the most favored regions. It admits of no question, that the earth was moistened with dew ; and of little dispute, that clouds were occasionally beheld in the horizon : but it may be reasonably doubted whether wind and rain were at all known to the habitable regions of the globe before the deluge. Previous to this event, the occurrence of these phenomena is not even intimated in scripture ; on the contrary we are assured, in a declaration that derives strength from the opposition which it expresses, that “ the Lord God had not caused it *to rain* upon “ the earth, and there was not a man to till the

“ground. But there went up *a dew* from the “earth, and watered the whole face of the “ground.” In estimating the means which were thus provided for maintaining the fertility of the earth, if the slow increase of the population be compared with “the whole surface of the “ground;” it will be obvious, that the economy of nature, in which this provision was made, must have been long protracted beyond the times of Adam, by whose labor it could not be compensated, if it had been suspended but for a short period. That disturbance of the atmospheric equilibrium, by the extremes of heat and cold, on which the phenomena of wind and rain depend, cannot be supposed necessary to the vicissitudes occasioned by the succession of the seasons. Notwithstanding the great physical change which has been effected in the atmosphere, by the deluge; of which the immense disparity in the period of human life, previously and subsequently to that catastrophe is an evidence; we experience in every season a succession of weather, in which the heavens are neither obscured by clouds, nor disturbed by storms. No reasonable objection, consequently lies against the conclusion, that, as the antediluvian atmosphere maintained a regular temperature, the heavens were unchangeably fair and tranquil.

Whatever be the conclusion however which is

finally adopted on this subject ; the atmosphere, as appears from the preceding scriptural authority, was distinguished at this early period by the singular phenomenon, that dew supplied the place of rain in irrigating the ground. And a strong confirmation of this conclusion may be deduced from the disclosure subsequently made, in describing one of the most remarkable appearances which distinguished the heavens, when “ clouds were brought over the earth.” By a very slight knowledge of the natural causes from which these different phenomena proceed, we may be now enabled to perceive, how strictly analogous the representation of Scripture proves to be to the deductions of Science.

The atmosphere, in the driest weather, is found to contain a quantity of watery vapor ; the proportion being computed at ten grains to the cubic foot of air, when its temperature is as high as sixty degrees of the thermometer. And in proportion as the temperature is raised, the capacity for retaining water further advances. The solar heat, which is collected by the earth and radiated from its surface, is the great agent by which the atmospheric temperature is maintained ; a continued interchange taking place, between the warm air which occupies the lower region, and the cold which occupies the higher, from the tendency of heat to maintain an equilibrium. As soon, however, as the sup-

ply of caloric is withdrawn from the air the vapor which exists in it in a pellucid state, becomes condensed ; and according to the degree of cold in the atmosphere, assumes the form of mist, cloud, or rain.

When illustrated by these observations, the simple fact recorded in the sacred history, of “ the dew watering the ground,” affords considerable insight into the nature of the antediluvian atmosphere. In characterising it by this phenomenon, as opposed to *the clouds* by which the skies were subsequently obscured ; the statement preserves the strictest analogy to what is now ascertained to be true by scientific inquiry. From the absence of clouds from the heavens, the greatest degree of heat was imparted to the earth by day, and radiated from it, into the immensity of space, by night. That degree of temperature was thus communicated to the air, which best fitted it for imbibing moisture, under the meridian sun, and for discharging it in vapor between its setting and rising. Such is the influence which the clouds possess over the process thus followed in nature, that it has been suspended by the appearance of one only in the sky ; no dew being observed to rise, until it had dispersed, or departed. From the simple fact which the sacred historian has so briefly described, it may be therefore concluded, that the atmosphere of the antediluvian world was

distinguished in an extraordinary degree by warmth and clearness; the temperature of the air having been high, and the heavens unclouded.

An opportunity will hereafter occur, to enlarge on the appearance of the rainbow; from which no inconsiderable weight is derived to the preceding remarks, that *rain* was a phenomenon of which the antediluvians had no knowledge. Nor does the correspondent observation, on their inexperience of *wind*, derive slight confirmation from the first passage in which any mention is made of it in the sacred writings. In detailing the natural causes, employed in abating the waters of the flood, it is expressly stated, that “God *made a wind* to pass over the earth, “and the waters asswaged.” It cannot be deemed the effect merely of accident, that reference should be made to this cause, instead of the influence of solar heat, to which an inexperienced observer would be most naturally disposed to impute the decrease of the waters. It has been ascertained by modern discovery, that the regions of the atmosphere are cold in proportion to their height; and that for any heat which they possess they are principally indebted to the solar rays collected by the earth and radiated from its surface. From this source, it must be obvious, no supply could be derived, until the waters, by retiring from it, had exposed

a sufficiently extended space for some time to their influence.

3. The business of the third day, we are informed by the inspired historian, consisted in the separation of the land from the water; in the distribution of the globe into its continents and oceans. “And God said, Let the waters “under the heaven be gathered unto one place, “and let the dry land appear: and it was so. “And God called the dry land earth; and the “gathering together of the waters called he seas.” Whether we conceive, that the changes, by which the globe was thus reduced into form, were effected by the accumulation, the upheaving or the subsiding of the land; it is difficult to separate from the agency employed in breaking up its surface, the chemical action, to which so much efficacy has been hitherto ascribed, in tracing the progress of the creation. If the direct cause of the mighty throes by which it was inwardly shaken, be sought in the volcano or the earthquake; the more remote must be discovered in the physical forces which produce these great convulsions in nature. The process by which we may conceive it was supplied with metallic veins, has been already described; by the subsidence or infiltration of the water with which it is overspread into its inner strata, those elements would be brought in collision, which on coming in contact would occasion the

fiercest chemical action. From the greater affinity of the metal for oxygen, a decomposition of the fluid would directly take place, hydrogen in vast quantities would be thus set free, and its elastic force being more powerfully excited by confinement, every obstacle opposed to its escape would be violently rent asunder. By the agency thus operating, and on a scale as extended as its power was intense, it may be conceived, the mountain and continent would be thrown up; and those vacuities shaped out, into which the earth might subside, while the valleys were formed and a bed was excavated for the ocean. The opening of channels, for the waters to flow off, would immediately give birth to the rivers; which would shape their courses to the sea, as the land, that set a barrier to its encroachment, declined to the level of its surface.

To form any just conception of the constitution of the earth, we must, however, consider it in connexion with that great catastrophe to which the Apostle alludes, in declaring that “the world which then was, being overflowed with water, perished.” By the shock which it then sustained, its appearance and constitution were so totally changed, that the resemblance which may be supposed to have existed between its present and its former state seems to have been nearly obliterated. On drawing an illustration

of the Apostle's declaration from its positive state; the observation of its internal structure justifies the inference, that, by the great convulsion which nature then sustained, its frame was wholly shattered. The absence of fossil remains from the formations, termed primitive, renders it possible, that the rocks of which they are composed might have escaped the overwhelming effects of that crisis in which the face of nature was wholly altered. The supposition is not a little aided by the position, if not by the texture, of these rocks; as they are generally found beneath those beds, to which the name of fragmentary and sedimentary is applied; and which seem entitled to this appellation from the marks which they bear of a great natural convulsion. But beyond the specimens, preserved in those rocks, of the constitution of the former world; little remains from which any just idea can be formed of the materials of which it was constituted. The determination of this position, however, is matter rather of curiosity than of importance. All that we are concerned in deciding may be determined, from a view of the higher strata of the earth, which are imposed on the rocks conceived to be primitive. So clear is the insight which they afford into its former state; that little difficulty seems to embarrass our inquiries into the nature of the revolution which then changed its constitution.

4. In taking a retrospect of the description of the three first days of the creation, on the accuracy of which the geological credit of the sacred historian in a great measure depends, we cannot fail to be struck with its analogical propriety. The order in which he declares the work advanced, corresponds strictly with that course which philosophy prescribes, as consonant to nature. From the introduction of that agency, which manifests its presence and operation by light, and which first exerted a physical influence on chaotic matter, the process is marked by a regularity of development, which cannot be deserted without violating the principles of science as well as arrangement. In that act of almighty power by which the earth, in being subjected to the vicissitudes of day and night, acquired a revolution upon its axis, which reduced it to its proper form, the order properly commences. In the operations, by which it was supplied with an atmosphere, upon the following day; and had its surface diversified, upon the subsequent, with land and water, the principle is not less clearly exemplified. From the absence of pressure upon the fluid mass of which the chaos was composed, its aqueous particles, particularly under the influence of heat, would be disposed to dissipate into vapor. As the existence of no natural cause is mentioned, which would obviate this result, recourse is had to the

agency of the presiding Divinity; and it is observable, that solely on this remarkable occasion is reference expressly made by the inspired historian to the divine intervention. In describing the primitive state of the fluid mass out of which the earth arose, he however declares, that “the Spirit of God brooded on the surface of “the waters.” With a scientific precision no less remarkable is the formation of the atmosphere described, as preceding the distribution of the globe into earth and sea, and the separation of the main lands and islands from the lakes and rivers. By the pressure of the air, the fluid was not merely preserved from dissipation into space, but a supply secured to the rivers, from the springs and reservoirs enclosed in the bowels of the earth. And thus was that constant circulation maintained and that irrigation continued, on which its fertility depended, when the sky was not obscured by clouds, nor the ground moistened by showers.

On the order observed in the operations of the three following days I touch more lightly, as they are less closely allied to my present subject, which is properly confined to geological science. In the change of scene, which distinguishes these days, the same principle is even more clearly exemplified; as the images which it conveys are more obvious and familiar. On one day, the earth appears, in the grateful di-

versity of mountain and valley, under the genial influence of warmth and sunshine. Another dawns, and witnesses, through their quickening efficacy, the expansion of vegetation, and the spreading luxuriance of the grove and forest. A third appears, and the picture acquires increasing interest and animation, as the living multitudes disperse in groups over the earth, so beneficently prepared for their habitation and sustenance.

But the tenor of events revealed in the sacred record appears at no time to greater advantage, than when contrasted with the order of things which the geologist affects to deduce, from an examination of the earth's internal structure. The clear, consistent narrative of its origin, bears at no time so deeply impressed on it the marks of truth, as when it is opposed to the history of its revolutions which he pretends to discover in the position of its rocks and the nature of its fossils. In the visions, in which his fancy is bemused, of a progressive development, in which incalculable ages were consumed ; nature is represented as slowly extending the scale of existence, from the lowest state of vegetable life to the highest degree of animal organisation. If the notion of a Creator be admitted into this scheme, the moral incongruities of which are even more gross than its physical inconsistencies, he is represented as improving upon his

first essays ; as destroying in succession his earliest and rudest works, to exercise his skill in the production of others, more worthy of his contrivance. During the immensity of time, in which, we are assured, this development of nature proceeded, the earth is represented as wholly abandoned to creatures, mis-shapen and unorganised ; monsters of the most hideous forms and ferocious natures. Until the appearance of man, whose production was the last effect of the repeated trials by which the succession of animals was formed, and whose introduction into the scene was deferred to the last ; not a creature is supposed to have existed on the earth that possessed a moral sentiment, or was capable of forming the lowest conception of its Creator. When compared with these putid and senseless dreams, how wise, suitable and consistent are the views which are opened to us by revelation ! Instead of the ages exhausted in bringing to maturity the divine purposes, six days alone are represented as occupied in the production of the earth ; which was formed in that perfection, that it was pronounced good by its author ; and which was designed for the habitation, and submitted to the dominion, of a creature formed in the image of his Maker. And even for the short period of so many days, the work is represented as merely protracted, that the seventh

might be peculiarly dedicated to the service of Him, by whom all things were formed ; to be employed in praising and adoring him as their Creator.

LECTURE IV.

GEN. I. 26.

And God said, Let us make man in our image, after our likeness : and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.

THE Earth, having gradually passed from its rude and chaotic state, to the teeming luxuriance of autumn ; for at that season chronologists have decided it was created ; it thence became fitted for the living multitudes with which it was replenished. In passing from the general view of the planetary system and the particular examination of our earth, as we proceed to consider the living beings with which it was supplied, and among which man, the most perfect in his organisation, was last introduced into the scene ; the subject, in coming home to our sympathies, acquires an increasing interest.

In the opposition, in which man is placed in the text, between the Omniscient Creator, on the one side, and the irrational creature, on the other ; the original and proper rank assigned to him upon the earth, committed to his dominion,

is clearly and forcibly asserted. Whatever be the resemblance in which the likeness consisted, that we are thus said to bear to the divine image; the exalted privilege of existing in a religious state, in which only it can be maintained, marks the immeasurable distance which is placed between the human and the bestial nature. We have, indeed, no means of determining *à priori*, what order of creatures would be best adapted to a world, formed and endowed like that which has been destined for our abode. But when we rise from the consideration of its original and constitution, to the knowledge of its Author and Ruler; in recognising him, as its intelligent Governor, the system is inexplicable, when the existence of a being occupying that middle rank, which is acknowledged to belong to us in the text, is overlooked or rejected.

Of the prerogative in which we are thus confirmed by Revelation, it is, however, unhappily the disposition of "Science, falsely so called," to despoil our nature. In the distribution of the Physiologist and the Naturalist, man is, indeed, conceded the highest rank in the scale of animal existence; the superior organisation which entitles him to this rank being sometimes courtuously considered the instrumental and operative part of his nature, by which the intellectual and immaterial principle that directs him discharges its corporal functions. But in the views

of certain professors of a kindred science, and of their enlightened adherents, with whom presumptuous confidence of assertion passes for force of argument, the notion of such a principle residing in the human form is entitled to no higher respect than is due to unmeaning superstition, or obsolete prejudice. From the purblind course which the Comparative Anatomist with his probe and scalpel is enabled to grope, he confidently pronounces that there exists no difference between the intellectual capacities of any animals which may not be resolved into the difference of their organic structure. As it is now generally admitted, that animals, though not endowed with souls, are yet possessed of some share of intelligence, and endued with it in proportion to the perfection of their cerebral hemispheres; the general inference is hence easily drawn, that, as it thus appears that matter may be intelligent,—thought is merely an accident of the body, and reason itself but the product of the brain, the fabric and mechanism of which is of a higher order.

Between the views thus inculcated by Science, and those entertained of Revelation, by those professed Christians who claim for a philosophical religion, as they term their crude and irrational systems, no difference is indeed discoverable, which can be deemed essential. Their views of Religion are, however, mentioned at

present, no further than as affording the opportunity of denouncing them with the sentence of the strongest reprobation. The view which is taken of the doctrine of the soul in such systems of Christianity derives no more countenance from Revelation, than the deductions of the Comparative Anatomist, on the operations of the mind, acquire from physiological Science.

Whatever idle disputation may have been raised, whether the doctrine of the human soul was maintained by the Jews and inculcated by Moses; none can be moved, that it was delivered by our Lord, and has been acknowledged by Christians. In the single declaration, in which he states, that, “those who killed the body, were not able to destroy the soul;” all subterfuge, by which the positive assertion of its immaterial, immortal nature would be evaded, is for ever precluded. Here the plea of ambiguity in the original term, as applicable to the life and the mind, is at an end, more particularly if these terms are conceived to express mere accidents of the body: for, as no accident can subsist independent of its subject, on the one perishing, the other must be involved in its destruction, while in this case it would be supposed to survive it. And as of the other tenets of its Divine Author, we may be said to have of this doctrine also, an exemplification in his person. Previously to his assumption of our na-

ture, it had been declared by Prophecy, that *his soul* would not be left in the abode of departed spirits. And in the last agonising moments, in which he yielded it up on the cross, its truth had the repeated confirmation of his authority. With his expiring words, he commended *his parting spirit* into the hands of the Father. And in the assurance given by him to the penitent thief, “this day shalt *thou* be with “*me* in Paradise;” it is not only implicitly maintained, that the soul, surviving death, would still exist in a separate state, but that on it essentially depends our personal identity.

As far as the point which is thus immediately at issue admits of confirmation from Science, it has been achieved by the highest authorities. The question of the soul’s immateriality has been long determined, not only by physico-theologians and divines, but by physiologists and psychologists; by whom the refutation of the materialist has been effected with a force of reasoning and range of illustration, to which he has hitherto proved incompetent to offer any efficient answer. As they have severally shewn the consideration of spirit is not involved in difficulties by which the notion of body is not equally affected. From their discussions, it clearly appears, that of the essence and the commencement of mind and matter we are equally ignorant; and that the scepticism which

is employed, in disputing the existence of the one, may be as effectually used in disproving that of the other. And far beyond these negative arguments, they have positively proved, that, of the phenomena of mind, the laws and properties of matter afford not the least solution; and that unless on the assumption of an immaterial intelligent principle, the nature of the human mind is as inconceivable and inexplicable, not merely as the existence of the soul but of the frame of the universe.

There is, however, a higher point of view, from which the subject may be more fully commanded; in turning away superciliously from which, the Comparative Anatomist takes especial care, that he shall not attain above a transient glimpse of its surface. It is indeed difficult to conceive with what prospect, but that of ensuring a total failure in the attempt, the decision of the question could be undertaken, unless when regarded in a light, strictly psychological. The absurdity of the effort to decide it, by taking it in a merely anatomical view, cannot be more forcibly illustrated, than by considering the difference between the living subject and the inanimate carcass. In both the organisation may be equally perfect; but from the one the intelligent principle has departed: while in the other, where it has ceased to exist, the inquirer hopes it may be exclusively dis-

covered. Judging even from the analogy of the vegetable kingdom, in which life and organisation are complete, the futility of the undertaking is rendered not merely obvious, but tangible. Here, if we doubt the testimony of one sense, the evidence of another, may convince us, that more deeply than both, the lurking principle must be sought, which will enable us to account for sensation. He who takes but a moment to consider the contrary endowments by which the subjects of the different reigns of nature are distinguished; the passive subjection to impulse in the vegetable, and the active exercise of thought in the animal: must be equally convinced of the incongruity and the abortiveness of the attempt, to deduce, from one common and material cause, effects of so contrary a nature.

I. On taking up the subject on the highest and most tenable ground, and regarding it in a strictly psychological light; whether the sensation with which animals are endowed be supposed, with the materialist, to exist as a mere accident; or believed, with the scripturist, to subsist in an independent principle; it may be considered with reference to the *appetites, senses, instincts* and *faculties* in which it is manifested. In the lowest of these endowments or qualities, some of which may be thought to derogate from the dignity of human nature, man, it is not to

be dissembled, differs but accidentally from the animals which enjoy a comparatively perfect organisation. Of the nature and operation of this part of the animal economy, we are thus enabled to form a judgment, from our own observation and feelings. In the varied range of what we experience in ourselves, or witness in animals; from the lowest solicitation of the appetites, to the highest exertion of the faculties; there must be some middle point, at which the influence of the spiritual and animal principle respectively terminates, if the distinction is admissible, and capable of being established. In prosecuting our inquiries, with a view to determine this point, upon the issue of which the main question depends, we shall be enabled to ascertain, whether our right be forfeited to the high descent which we claim through the text; or our kindred be confined to the ignobler animals, allied to us by a common and a mortal nature.

1. In entering on the subject, our observations may commence, previously to considering the senses, instincts and faculties, of the brute creation, with their *appetites*, as more generally developed in the animal economy. They seem to be enjoyed even by those, whose senses are comparatively few and obtuse: and are bestowed alike on the rational and the irrational, for the preservation of the individual, and the propaga-

tion of its species. In regarding them with reference to the division of the animal functions, into vital and natural, on which I shall have occasion hereafter to touch; the gratification which attends the exercise of them depends exclusively on the latter. The decision of materialism is not more constant, than the voice of inspiration, in representing them, as not depending upon the spirit, but having their seat in the flesh. They are on the contrary represented as exercising an antagonist influence to the immaterial part of our nature; “the flesh,” observes the Apostle, “lusteth against the spirit and the spirit against the flesh; and these are contrary, the one to the other.” In being thus opposed to that internal principle, as they detract nothing from the grounds, on which it is independently claimed; as participated by our nature, they contribute nothing to diminish the immeasurable distance which separates creatures, that merely exercise the animal functions, and that obey the dictates of an intelligent monitor. For, let it be remembered, that as implanted in man, they serve a wise and moral purpose. In the state of probation in which he is placed, temptation is necessary to his warfare, and his triumphs. Through the solicitation of them alone he is exposed to those trials: implicated in a contest, between animal propensity on the one side, and moral restraint on

the other, to which no irrational creature is subjected. In him alone the appetites are consequently placed under the control of reason ; with the monition “ to abstain from these fleshly “ lusts which war against the soul.” Nor, until he is vanquished in the conflict, can they contaminate the flesh, much less infect the soul. While they thus prove practically useful, in exercising and improving us in moral discipline, they answer their true end ; as training us for that higher and purer state, in which, “ the flesh “ being put off, with its affections and lusts,” the strife will terminate, in our natural propensities having no gratification but in unison with our moral approbation.

Nor can the likeness which may be still objected to us, as assimilated to the beasts in our propensities ; be urged, in derogation of our nature, or as proving the obliteration of the divine image of which we have received the impress. It is not by being obnoxious to these appetites, but by being criminally compliant to their suggestions, that the divine likeness is effaced on the one side, and the debasing resemblance acquired on the other. This degrading similarity, which we have it in our power to heighten, or to abolish, may further conduce to practical advantages : in acting as a preventive against those indulgences, by which the distance between the human and the bestial nature is

shamelessly removed. Whereas had the objects been wholly dissimilar, as there would be no room for comparison, there had been no ground of reproach. The imputation of the resemblance, which operates as a restraint upon excess, must have thus sustained a diminution of its power. For he who dishonors his nature by sinking below the rank of a man; must more indelibly disgrace it, by descending to the level of a beast!

Nor is it to be reasonably conceived, that the Being “whose tender mercies are over all his “works,” in ordering the economy of nature, would be unmindful, of the lowest of his creatures. In submitting them to the dominion of man, he has beneficently provided, that they shall have strong claims on our regard; as participating in the same wants, and in some measure partaking of the same propensities and nature. It is to this similarity, that in many of their social habits, their mutual attachments and devotedness to their young, they are chiefly indebted for the interest which they exert on our sympathies. Had they been endowed with a shape, nature and economy, totally different from our own; they must have forfeited these claims on our tenderness and regard, or have been viewed with the disgust and terror, which monsters usually inspire.

Nor should it be overlooked, that it is only

by an abuse of that reason which they are denied, that we can debase our nature, by descending to their level: as, when it is lost, or impaired, we cease to be accountable beings. But while we thus designate them as irrational, we should not, in the mean while forget, that they are sinless. For like all the works of that Divine Being, whose attribute is purity not less than power, they came from his hands “very good,” even in his estimation. Indeed, on this character of freedom from sinful taint, the fitness of their appointment for vicarial sacrifice seems to be founded; God, in accepting “life for life,” receiving that only which was exempt from moral pollution.

2. As no objection lies against the existence of the human soul, from the appetites shared by us in common with animals; no presumption arises from the *senses* in which they resemble us, that they are animated, like us, by a thinking spirit.

Let me, however, again premise, in entering upon this head, that whatever obscurities the subject presents are rather to be cleared away, by examining the living function of the organ, than by inspecting its anatomical structure. As our senses afford the only inlets to knowledge, on an inspection of the organic apparatus by which they convey images to the brain, the scientist readily concludes, that they are na-

turally constructed to produce the impressions directly of which he has personal experience. It requires, however, but little insight into the secrets of physical and metaphysical science, to be convinced, that this conclusion is as little supported by fact as principle. The physiologist, as distinguished from the mere anatomist, can on the contrary prove, and we are fortunately able to verify his deductions on the evidence of our senses, that the organs through which the main stock of our ideas is derived are constituted to impart false impressions to the mind, and that it is from its own reflex act, that they receive the correction which renders them accurate pictures. Where of course no mind exists to make the correction, where no sense even appears, through which it could be informed; it seems preposterous and absurd to decide upon the function from the dissection of the organ.

We have the assurance of the most profoundly skilled in physiology, that the senses are developed in the human species, in an inverse order to that which is observed in the animal. In our constitution, *feeling*, or touch, occupies the highest rank, with which they appear to be wholly unacquainted: they do not possess a sensible organ, through which it could receive adequate impressions. The extremities of the limbs, where the complexity of the nerves pe-

cularly qualifies us for exercising the function, are in them remarkable for their callous induration. They are armed with hoofs, or fortified with claws, to assist them in searching for their food, or seizing their prey; the means of attaining present subsistence being principally consulted in their organisation. To this end, their other senses as obviously conduce: and from the artificial process by which the functions of *taste*, *smell*, and *hearing* are developed in ourselves, and the accidental associations, on which they depend for the power of exciting ideas; we may infallibly conclude, that the method in which they operate on animals is confined to physical impulse, as contradistinguished from intellectual impression. From this view of the question, the employment of the organs in imparting ideas, through the medium of speech, is of course excepted: not merely as this faculty is peculiar to man, but as conveying impressions through visible as well as audible symbols, as employing the tongue, the ears, and the eyes, its connexion with any sense is of arbitrary and conventional appointment. This exception being made, we are limited to the single consideration, that if animals are endued with that intelligence, which justifies the supposition, that they are possessed of souls, *the sight* must be the sense, through which they receive their ideas.

The difficulty of the question being reduced within this narrow compass: on the testimony of our own senses, it may be decided. Before the operation of couching had been performed on the human eye, it had been a question with metaphysicians, whether the person who had learned only to distinguish forms by the touch, would, on receiving his sight, as unerringly distinguish them, by the sense newly acquired. The particular instance was stated, whether the difference which the feeling enabled a blind person to perceive between a sphere and a cube, would be equally perceptible to his eye, on acquiring perfect vision. It was justly decided in the negative: for it was solidly reasoned, that the contrary supposition being admitted, the impressions of one sense might be then conveyed through another; which was in effect to maintain, that the blind might acquire from the touch an idea of colors. This deduction of science soon received a practical proof: when an opportunity occurred for consulting a person qualified to decide the point, by having undergone the operation of couching.

On the occasion of the same interesting experiment, several curious points in metaphysical science received illustration; which are now of value, as they enable us to decide on the impressions derived by animals from the

senses. It was then equally ascertained, that through the newly acquired sense, no idea was imparted of distance ; the patient who obtained his sight finding it difficult to undeceive himself, that all objects did not immediately touch him. A new subject of inquiry consequently arose ; for it was now of importance to ascertain, as the sense and the object continued the same, by what act of the brain or mind, the impression changed its nature. And the solution of this point had been equally given, by anticipation. It was in fact decided on principle, that an act of *judgment* was exercised by the mind, in which is implied a deduction by inference from comparative objects : and that in resting its decision on the evidence of the senses, it had been determined by that of *the touch*, as least liable to deception. On the same grounds, the optical illusions to which the eye is exposed were easily explained ; and the paradox solved, how those objects which present themselves through the organ in an inverted posture, are restored by the mind to their natural position. In a word, from the seat of thought in the sensorium, the principle was easily extended to the allied senses, to explain every organic deception of sense and the mode of its correction ; when from a false impression, conveyed of the distance or direction, the loudness and lowness in a sound, an act of the mind was necessary

to the formation of a just notion, respecting its cause or nature.

In the inferences which thus follow, not less from personal experience than the structure of the organs of sense, the supposition is utterly subverted, that the impressions derived by animals through their senses can be at all analogous to the ideas which ours convey to the understanding. As the accuracy of perception depends not merely on an act of the mind, but on the exercise of the sense of touch which they do not possess; the supposition that any impulse imparted to their brain can be a representation of the object from which it proceeds, is even more extravagantly absurd than that the notion which the blind man derives from description can be an accurate picture of color. This conclusion therefore determines irrefragably against the animist, who, adopting the opposite extreme to the materialist, from the difficulty of conceiving how matter can think, bestows an intelligent soul on the irrational as well as the rational animal. For the assumption on which this consequence hangs, that animals have ideas, or think, is unhappily opposed not less to the deductions of science, than to the testimony of our senses.

The analogy is so striking between the preceding deductions and the circumstances recorded by the Evangelist, of the effects produced

by the preternatural acquirement of sight, that it would be an unpardonable omission to pass it over in silence. In the miracle performed by our Lord, on the blind man at Bethsaida, the double operation, by which the organ acquired the sense of sight, and the faculty of discernment, are distinctly specified. By the first act of divine power, the patient was enabled to see, but without the capacity to distinguish “men “from trees;” but by the second, he was endowed with the perfect use of the sense; “he “looked up, and saw every man clearly.” How little calculated chance or ingenuity must have proved to the invention of such an incident, before modern science had explained the nature of vision, may be collected from the diligence with which the transcriber has labored to distort, and the commentator studied to pervert, what could not be understood, in the existing state of knowledge.

3. While the imperfection of the organisation of animals may be urged, in defence of any defect in their senses; by their *instincts*, it may be thought, the balance is restored; as proving their organs possessed of an extraordinary degree of acuteness, surpassing anything of which ours are sensible. So far it may be observed, the original objection remains to our deduction, in favor of the immateriality of the soul, from the impossibility of referring to matter, however

organised, intellectual operation. But wonderful as the functions are with which they are endowed, there is no philosophical ground for supposing them the source of thought, or for referring them to any causes but those of material impulse. So immeasurably wide, of course, is the distance which is still placed between our faculties and their instincts, as to leave every claim unimpaired which may be advanced for the human nature, as formed after the divine.

In vain is the sagacity of the dog and the elephant urged, in proof that man is not the only creature which is possessed of intellect. The animal, we may be told, that answers to its name, and has some knowledge of its master or keeper, must have a different notion of him, and of others of his species. But the principle will not, in any sound philosophical view, bear out the conclusion. Of both those animals it is remarkable, that they employ, in smell, the service of a second organ, by which the imperfect impressions derived from sight are in some measure corrected. The question is thus thrown back to the original objection, that the evidence of a second sense is requisite to correct the natural defects of vision: and were we not conscious from experience, we might be convinced on principle, that the smell is wholly incompetent to this subsidiary function. That the sight, in the case of the dog, discharges its

office too imperfectly for the purposes of the animal's conviction, is abundantly evident, from the necessity under which he is placed to apply to the former sense for confirmation of the latter. The one which he consults is of that exquisite sensibility, that he is enabled by it, to track the steps of his owner, over the path which other feet may have trodden. But one observation will sufficiently prove how much the knowledge, with which we suppose him endued, is resolvable into the impulse mechanically given to his organs. Those dogs, it is generally observed, that like the grey-hound are remarkable for possessing no acuteness of scent, are as remarkable for a want of sagacity in recognising their master's person, until the sound of his voice has removed their indecision. As the proboscis of the elephant is but an extension of the snout; in discharging the function of smell as well as compression, it equally supplies that animal with the advantages of a second sense; that, in remedying the errors of sight, supplies in its organisation, the place of touch, to which man is indebted for his justness of vision. So far therefore are we from having evidence from his sagacity, that he has ideas; that estimating his senses by our own, it is inconceivable, how they can communicate accurate images. In judging of the advantages derived by these animals from those subsidiary impressions, to

which they are apparently indebted, from the employment of a second organ, for their superior reputation for sagacity ; we are aided by the additional experience in our own persons, that the impressions received by one organ are competent to recall the sensations derived through another. A sound or odour is thus not only capable of reminding us of a particular object or scene, but of awakening a train of dormant ideas. It is therefore perfectly conceivable, that at the sight of different objects, the animal is conscious of different sensations ; but contrary to our experience and reason to suppose, that they correspond with the ideas which we derive through our senses.

But to be convinced of the utter insignificance of the objections to the doctrine of the human soul, deduced from the instincts of animals ; it is expedient to take a comparative view of the endowments, that appertain, under that term, to the brute and the human nature. In the first essay, by which metaphysical speculation was placed on the solid basis of science, the sagacious author, in opposing the existence of innate ideas, unfortunately included in the proscription those instinctive principles of the mind ; in which we as eminently surpass all other creatures, as in our intellectual powers. However they eluded his observation, it is certain, notwithstanding, that they are alike connate with

rational as with irrational creatures; and that in the state which is favorable to their cultivation and exercise, they may be improved to the most exquisite degree of intenseness. Among savages, the external senses acquire this acute sensibility, by that constant exertion, and concentrated attention, from which every mental faculty admits of the highest improvement. Hence has the absurd supposition arisen, that they are placed, by their instincts in the scale of nature, between rational and irrational animals: obviously from inadvertence or ignorance of the fact, that the mind has no ideas but those derived from education, to which the savage state is not propitious; and that, not being diverted from its object by abstract speculation, a keener edge is given to the attention, which imparts to the senses a correspondent acuteness.

But far beyond this intensity of the senses, which when thus cultivated in the state of nature nothing in the animal instinct surpasses; we possess in common with them an innate susceptibility, not merely of irascible and concupiscible feeling, but of painful and pleasurable emotion. As these sensations are as indefectibly excited by their objects, as the impressions of sense; and are at the same time antecedent to education, and not to be eradicated by it; they necessarily come under the denomination of instinctive. Every one must be like-

wise sensible, that he is occasionally actuated by impulses from within, when his reason has neither time nor opportunity for exertion. The apprehensive quickness with which we shrink back, at the sight of sudden danger; the abstracted inadvertence with which we perform customary acts, of which we possess no consciousness, and retain no remembrance, are familiar instances, which must have come under every one's experience; and they furnish a criterion, by which the nature of animal instincts may be ascertained, and their influence on the present question clearly determined.

From our personal experience of these sensations, and our physiological inquiries into natural instinct, it may be concluded, that they have their seat in the external sense; and no more require us to suppose the existence of an immaterial, as distinct from a vital principle, necessary to their subsistence, than to that of the vegetable that is wounded by external violence, and has its vitality destroyed with its organisation. From the most ingenious theories devised to explain animal instinct, it appears, that it proceeds from a concentration of vital energy, an accumulation of organic sensibility. It is thus resolvable into corporal affection and operation, and is thus explicable, on the supposition that matter is acted on, in the ordinary and observable mode of sensible impulse. When

estimated by the end for which it is designed, it appears to be limited to the perishable subject in which it is inherent. As bestowed on the animal for the preservation of its natural existence, and the propagation of others of its kind; when that existence has ceased in the dissolution of its body, and the species remains in the progeny which succeeds; the reason for its continuance ceases, and of course, for the permanence of an immaterial subject, in which it might continue.

The case is precisely the reverse with the *moral* instincts with which we are endued, by which, it is observable, in the last place, the distance between the human and animal nature is rendered immeasurable. Of that intuitive sense,—by which we atonce perceive, with an intensity proportionable to our lights and opportunities, the difference between right and wrong, between good and evil, truth and falsehood, they are not merely destitute, but absolutely incapable:—of which, also, education has just as little power to excite even the feeblest spark in them, as to extinguish the light in us, however it may stifle or obscure it. From these *moral* instincts, by which our nature seems to be as strongly characterised, as theirs is marked by the *natural*; the permanence of the subject in which the one resides seems to be as plainly deducible, on the one side, as the perishable

nature of that in which the other is seated, is on the opposite. For it is by this discriminating power, that we are rendered accountable, for a perverse election of the evil course, when the good lies open to our choice, and receives our approbation. And as we know that this account is not rendered here, we conclude, not less from the intention of the endowment itself, than the moral attributes of him who bestowed it, that there is a state in which, in consistency with these attributes, it will be required.

4. While, in our very instincts, we are thus characterised as beings of an essentially different nature from irrational animals; in our moral and intellectual powers the difference essentially lies, by which we are placed from them, at a distance which surpasses all computation. And the truths to which these powers enable us to attain on the subject before us, furnish perhaps the most happy illustration of their range, extent and capacity. Investigating by their means, the laws of matter and motion, we are atonce enabled to perceive the absurdity of resolving any mental operation into mechanical or physical causes. The supposition, that the works of art and genius, the accumulated stores of science can be the product of organic matter, is thus easily proved not less absurd, than the conception, that sensation and thought exist in a vegetable, and our secretions are intellectual

and ideal. Far even beyond this, by the light with which we are through them inwardly endued, we are not only able to discover the existence and providence of God, but the whole system of Natural Religion ; and thus attaining some knowledge of our duties not only to him and to each other, but with reference to the present state as well as a future, enjoy that privilege, which is the most exalted of our nature, to be a religious creature. At a distance, how incalculably depressed below this elevation, are those animals placed, who are not merely deprived of this light, but are by nature incapacitated to receive its warmth and glory ! Degraded, how immeasurably, beneath this exalted state of privilege and knowledge, is their lot, who are so irrevocably limited to the present life, as to be incapable of forming any notion of another ; to whom irremediable ignorance is so great a boon, that they have been formed incompetent to attain any notion even of extinction and death, that life itself might not prove the heaviest affliction !

The conclusion, therefore, is not less decisive against the animist, than the materialist : the propensities, senses, instincts and faculties with which the brutes are endued furnishing as little presumption that they are possessed of souls ; as the moral and intellectual powers with which we are endowed afford evidence, that we are

animated by an intelligent spirit of that order. The discussion thus finally settles in that happy medium, equally removed from the extremes on either side, where truth, after a protracted search, is generally discovered. As the conclusion, that there are some more highly favored creatures who are thus endowed, occupies this middle state, between the notion advanced on the one side, that all creatures have souls, and that maintained on the other, that no creatures possess them.

II. As we may now adopt the conclusion of the profound author of “the Analogy of Revealed and Natural Religion,” on the nature of the soul, freed from the only objection by which it is considered assailable; every difficulty is removed from the text, which is not less remarkable, for the high testimony that it bears to the dignity of our nature, than for the obscurity in which it is still unhappily implicated. If, as that great master of reasoning maintains, and the text apparently intimates, “our organised bodies are no more ourselves, or part of ourselves, than any other matter around us;” in the *immaterial* and *immortal* nature, which he so powerfully vindicates to the human soul, that likeness must be sought, on account of which we are said to have been “made in the divine image.”

When the text is taken in this sense, that the

genuine force of it is preserved, seems very clearly to follow from the general tenor of Revelation. The contrast which is expressed in the context, and the correspondent passages of Scripture, between the human and the bestial nature becomes more just and striking, from the light thus reflected upon it; the divine impress, with which the one is said to be stamped, bearing in this sense a direct opposition to the *material* and *mortal* character with which the other is branded. In the narrative of the fall which directly succeeds, and in which the mode is described, wherein this image was in some measure impaired or effaced, the same mode of thought and expression is maintained. In the sad reverse which was then sustained, an inlet was made for the introduction of *sin* and *death*, by which we have been rendered *corruptible* and *mortal*.

Before the melancholy crisis which thus brought sin into the world, and death by sin, the intimate and indissoluble union between these constituents of our nature rendered the material part as *incorruptible* and *immortal* as the spiritual. In ascertaining the change which it then sustained, what has been lost in the first Adam may be gathered from what has been recovered in the second. The Apostle by whom the comparison is made, between the effects of the resurrection and death, in contrasting the

effects of the fall and recovery, explains himself with reference to *the divine likeness*; the language in which he delivers himself consequently forms the most apposite comment upon the subject before us. "The first man," he declares, "is of the earth, earthy; the second man is *the Lord from heaven*. . . . And as we have borne the image of the earthy, we shall also bear the image of *the heavenly*. . . . For this corruptible must put on *incorruption*, and this mortal must put on *immortality*." To preserve any connexion in the Apostle's reasoning, we must understand him as placing "the heavenly image" in the participation of "incorruption and immortality." But what is recovered in Christ having been that which was forfeited in Adam; the image which was partially lost, being that which is restored, is necessarily an *incorruptible* and *immortal* nature.

In the calamitous consequences which then ensued, it however seems most consonant to the object and tenor of Revelation to suppose the organised body was exclusively involved. By it we are instructed, that *the flesh* is the seat of those sinful lusts which defile the soul; as we are assured that it alone is obnoxious "to death, the wages," or penalty of moral transgression. The contrary supposition being admitted, many incongruities follow by unavoidable consequence; that the primitive transgressors suf-

fered death alike in their mortal and their immortal nature, and, that the souls of their descendants are generated with their bodies. That the divine image is in some sense retained, appears on that testimony, to which there is nothing equal or second, even in Scripture. In a contrast even stronger than that which is expressed in the text, and which tends in no small degree to remove its obscurity; the permanence of that image is implicitly declared by the Divinity, when renewing to man the charter of universal dominion. In conceding to him, a right to slay for animal food, and to deliver the murderer to execution, he denounces his wrath against homicide: “And surely your blood of
“ your lives will I require: at the hand of every
“ beast will I require it, and at the hand of
“ man: at the hand of every man’s brother will
“ I require *the life of a man*. Whoso sheddeth
“ man’s blood, by man shall his blood be shed;
“ *for in the image of God made he man.*” While it would seem to be nugatory, to urge that likeness in prohibition of the offence, or in aggravation of its criminality, had it been altogether effaced; the assurance of its continuance must have operated, as the most powerful dissuasive to its perpetration. For, in raising the hand of destruction against one of the creatures of God, it must have loaded with guilt still more heinous the offender, that his victim bore, in the divine

image, the impress of an incorruptible and eternal nature. As we should have the authority of an Apostle, if we wanted the conviction of experience, that in the earthy nature, it was altogether effaced; there is but the alternative, that, in atall remaining, it must exist in the immaterial and immortal.

In casting a retrospective glance upon the subject, thus gradually developed, what mind can avoid being struck at the harmony, with which the entire economy of nature and grace is adjusted! So wonderfully is the end adapted to the means, that from a review of the object to be attained, and of the powers requisite to effect it, we are almost competent to determine the nature of the beings by whom it was designed to be carried into execution. Thus admirably have the different instincts with which the human and the animal nature are endowed, been severally adapted to the part respectively designed to be performed, and the state for which the creatures possessed of them were respectively intended! Those beings which are destined for this transitory scene, are furnished merely with such as contribute to their self-preservation; while those who are formed for a higher and everlasting abode, are endued with such as are preparatory to its attainment. Or as both natures are united in our person; to each of them, those powers are assigned which

are adapted to it in the different states of our existence. To that nature which serves us in our present sojourn, such functions are annexed as perish with its dissolution ; while that which is constituted for a more exalted sphere is exercised in such as are immutable and eternal.

To him who takes a brief estimate of the proofs, suggested by philosophy, in support of the doctrine of the soul ; so deeply will they be found to be laid in the soundest principles of metaphysical science, as not to be shaken without involving in their ruin the noblest ornaments of the structure. On the assumption of the truth revealed in the text, that ^{the} “ in the “ image of God made he man ;” the eviction of the nature of the Divine Being, and, of course, of his attributes, if not of his existence, seems so necessarily to depend ; that let that truth be denied or invalidated, and the demonstration of the great fundamental, with which Natural Religion has been enriched by that Science, is unattainable. In the chain of metaphysical causes and effects, of which that demonstration consists, the first link on which the whole series depends is the conviction with which consciousness impresses us, that a thinking being exists. From the certainty of this fundamental position, the conclusion is regularly deduced, that a thinking Being, the Author of all wisdom and thought, must have existed from eternity. In

this induction, however, it is plainly, though tacitly implied, that the finite being, from the certainty of whose existence the nature and eternity of the Infinite is deduced, must in some respect bear his image or likeness.

When this fundamental point is disputed, it may be, indeed, reasonably doubted, whether, in the method of cause and effect, such a demonstration could be logically effected. We might still, it is true, be enabled to establish, by a physical chain of that nature, the existence of a Great First Cause, in which the infinite series commenced. But we could thus approach no nearer to an idea of his nature, than to conclude, that he was matter, or its negation. For, since the former supposition, as implying endless change and corruption, and the latter as meaning nothing but nonentity, must be rejected, as affording no notion of God ; in proceeding thus far, with the proof, we could not be supposed to have advanced a step towards the conclusion.

Nor can it be justly disputed, that as long as the existence of the soul was denied, the case could not be improved, nor the proof of the existence of a God be amended, by substituting mind for matter ; whilever it was conceived but its accident, as the materialist absurdly imagines. For as the preceding objection would still remain, that the subject in which it was in-

herent, was corruptible and changeable ; and a similar objection would arise, that the accident abstracted from it, was mere nonexistence ; the proof would be thus reinstated precisely on the original ground ; not an advance being made, in ascertaining the nature of the Divinity, unless the term might be applied to matter, or to its accident or negation.

It seems not even too bold to assert, that when the objection to the soul's existence is carried to such an extent, and the method of reasoning is rejected by which it is established ; no form of argument remains of sufficient validity to prove the existence of the Deity Himself. If the internal operations and the external productions of the human mind, its freedom of will, its inventive capacity and powers of execution, do not evince the existence of an intelligent being, of a nature essentially different from matter, and endued with an almost boundless control over it ; human ingenuity seems not competent to devise a mode of demonstration, by which the existence of a God can be deduced from an inspection of the works of nature. Infinite as is the distance between the Creator and the creature, though his divine essence is of a nature altogether distinct from every created subsistence ; the steps by which we rise to the knowledge, that there is such a *Spiritual Existence*, the *Great Artificer* of the frame of the universe,

differ in nothing from that process by which we ascertain, that such is the nature of the human soul, which it was his good pleasure, so far to stamp “with his own image and likeness.” Immeasurable as is the distance between the work and the operator, at either extreme of the comparison; the method of inference, by which we attain any ground of conviction, cannot be assailed by any form of objection, on the one side, by which the opposite will not be affected. In the scepticism, which proceeds to this desperate extent of denying, that an immaterial and immortal Intelligence is the inmate of the human frame; the limits of infidelity must be so indefinitely enlarged, that no ground can be found for conviction, unless in the conclusion, that the Divine nature and attributes are alike unentitled to that character. Nor can the mind, by which this fundamental point is abandoned, if it at all advances beyond it, find its progress arrested by any place of support, until it has sunk to the very depths of atheistic brutality.

III. To the conclusions of reason, the materialist, however, deems it sufficient to oppose the results of experience. The influence of bodily debility and disease, in producing feebleness and derangement of mind, he considers fatal to every inference, from the nature of thought, that the principle from which it proceeds is immaterial and immortal. In tracing the growth

of the embryo from the first pulsation of life, and the progress of the understanding from the earliest dawning of intellect; the difficulty in which the undertaking is involved, to point out the moment in which the union between the soul and body takes place, he pronounces irreconcilable with the notion of their coëxistence. The total dependance, in like manner, of the intellects on the body, from the first to the second childhood,—as proceeding at the same rate, in their advancement and their decline,—establish, as he conceives, that inseparable connexion between mind and matter, which is inconsistent with the deduction of thought from an impassible spirit like the soul. Can that, he demands, be conceived immaterial, which is thus subject to accompany, in sufferance, the matter in which it is embodied; or that be considered immortal, which to the moment of dissolution betrays every symptom of decaying nature, which the frame that encloses it exhibits in its decline?

In meeting these objections, it is not necessary to take refuge in the usual plea of acknowledged ignorance, as to the nature of the connexion between *mind* and matter; which is to us involved in mystery as impenetrable, as that which unites the *soul* to the body. It is not necessary to oppose one difficulty with another, and to object, that we are just as incompetent

to account for the mode in which any act of the limbs follows the determination of the will ; as to explain the manner in which the soul determines the bodily organs to execute any thought it may inspire. Nor need we have recourse to the gratuitous assumption, that in thus employing their intervention, as it makes use of them merely as instruments, as well in imparting as in receiving ideas : in both operations, it is liable to be affected by any imperfection under which they may labor. Of consequence, as we are only acquainted with the operations of the soul, through the acts of the body ; that the latter only is assailable by the imputation of derangement and decline. As little necessary is it to meet the objection, by charging it with being erroneous in point of fact ; the mind often retaining its powers under the heaviest pressure of bodily malady, and in the moment of dissolution exhibiting the fullest intellectual vigor.

Each objection admits in fact of an explicit answer. In meeting the antecedent, it may be premised, that little hesitation is felt in determining the time of the soul's dissociation from the body : the moment in which the last breath departs, being considered the crisis of its separation. Not only the analogy of the case, but the soundness of the assumption, seems to require, that the time of the union, like that of the departure, should be also dated from the

moment when the breath is for the first time respired. If this conjecture admits of confirmation, as I am persuaded it does, from the concurrent voice of Revelation and Science; many unprofitably curious disputes will be terminated, on the origin of the soul. Instead of being conceived to preëxist, to be deduced *ex traduce*, or be generated with the body, it must be thus supposed to be created, and associated to it, at the time of its birth.

This last supposition seems to be fully borne out by the authority of Scripture. Such indeed appears to be its purpose, in dilating on the circumstances that attended the creation of the first of our kind; “And the Lord God formed “man of the dust of the ground, *and breathed “into his nostrils the breath of life*: and man “became *a living soul*.” The conclusion of the passage, which is here expressed with a literal servility, may be rendered, according to the genius of the original language, “and inspired, “with the breath of his nostrils, a living spirit, “and man became a living soul.” These expressions are elsewhere connected in such a manner, as mutually to confirm and illustrate each other: “all the while my breath is in me, and “the spirit of God is in my nostrils,” observes Job. And many other passages are only to be comprehended, on the assumption of the same position being true; on which indeed is founded

the subjection which every man owes to God, as individually his Creator. "Thou takest away their breath," observes the Psalmist, "they die, and return to their dust. Thou sendest forth thy spirit, they are created."

Nor is the testimony of Physiology less decisive, in marking the first moment of respiration, as the crisis, in which it may be said, that vitality properly commences. The existence which the foetus previously experiences approaches, we are assured, rather to the vegetable life than the animal; like the germ in the earth, it seems to commence, develop, and grow, by the simple law of capillary absorption. The organs of the animal life are not even perfected in it; and the parts of the organic remain void of activity. The respiration and circulation being suspended, it lies in a state resembling that of sleep, and possesses no voluntary motion, all its movements being automatic: and as it has no objects to exercise the senses, to it the organs of sense must be necessarily useless. But as soon as introduced to the air and light, with the first breath that it inhales, it acquires that new existence, under their stimulating effects, which may be properly considered vital. Had we been, therefore, empowered to select *à priori* that period in the incipient life which was best adapted to the union of the soul and body, one more critically just than

that which Revelation points out, could not be possibly chosen. For, before the moment when the infant is introduced to air and light, the first pulsation of life cannot be properly dated; the vital functions, as distinguished from the natural and organic, not strictly commencing, before the first impulse which is then given to the respiring and circulating system.

From the time at which the soul is thus joined with the body and the intimate union which subsists between them, we may conclude, that a material organisation, though unnecessary to its *existence*, is necessary to its *instruction* and *operation*. That in this view of the compound nature of man a just estimate is formed of it, seems to follow, not less plainly from the origin and extent of our ideas, than from the power which material and immaterial subsistences appear to exert over each other.

For in the first place, it appears from every sound deduction of metaphysical science, that the mind possesses no *ideas*, which can be termed innate; the entire store with which it is supplied being acquired through the external senses, or deduced by inference and reflection from the stock which they have imparted. In the next place, with the exception of this contemplative power, the mind has no *active power*, that is independant of its material organs; that it is limited in *its operations* by them,

plainly appears from its incapacity to act, where the organ is maimed or amputated. In the last place, it is obvious from the nature of an immaterial subsistence, which, for the same reason, that it is incapable of physical action must be inobnoxious to physical sufferance,—that *its existence* cannot depend upon that matter, which, as thus appears, exerts over it no active power.

When a just conception is thus formed of the union subsisting between the immaterial soul and its organised body, through which its ideas of external nature are derived, and by which its operations upon it are performed; it will be readily acknowledged, that by the diseased state of the organisation, the operations may be generally affected, while the source of thought and action is altogether unimpaired. Of consequence, as the term *mind* has no meaning, if it do not signify the mental operations, it is inconsequential and absurd, from their derangement, to infer an unsoundness in the mental principle, with which the instrument is exclusively chargeable.

To this view of the subject the doctrine of the resurrection contributes no considerable illustration and support. For forming us with the corruptible and the glorified body, with which our nature is supplied, there must have been adequate reasons: and on the supposition, that the soul derives its capacity of action and sufferance from its union with the body, they

seem obvious and reasonable. But it is not, on the contrary, easy to conceive, if the soul possessed this capacity equally with the body ; why, on the union between them being once dissolved, it should again be renewed : as the different part which it is allotted in its probationary and its retributive state might then be respectively discharged in the mortal and immortal nature which death dissociates. On the other hand, the exercise of the contemplative faculty, in which the beatific vision probably consists, appears, on the authority of Revelation to be wholly independant of the body. To this effect St. John delivers himself in describing the existing condition of “ the martyrs’ souls,” in a state of separation from their bodies ; and St. Paul, in recounting the circumstances of the celestial vision, which was vouchsafed him, when rapt into the third heaven.

There is, indeed, a peculiar case, in which it may be supposed a physical operation is exercised by the mind, without the intervention of bodily organs. In the numerous daily instances of *nævi materni*, to which the experience of the least observant must extend ; we perceive mental action and material sufferance connected by a principle, which operates according to no known laws of cause and effect in mechanics or physics. The influence which we perceive the mind exert over the limbs, in directing their

motions, according to its spontaneous determinations, may be deemed an analogous case, but is essentially different. On the one side the passive subject is merely susceptible of mechanical movement, but on the other liable to physical changes ; for which its plastic state at the moment of the impression offers no solution, that at all explains the mysterious agency which is exerted. Physiologists exist, I am thoroughly aware, by whom the fact itself, that any such effects are produced, is pertinaciously disputed. But in the determination of a mere matter of fact, on which every person becomes competent by experience to decide, the pertinacity of scepticism can have no effect beyond that of provoking contempt and derision. Nor can it really find any foundation but in that vanity of empirical pretence, which resists every thing, as false, which is beyond its comprehension and explanation ; although the influence of mind upon matter is incapable of either, and cannot be doubted by him who possesses the faculty of moving one of his members.

In the preceding observations, I have undertaken, I trust upon no inadequate grounds, to question the opinions of three of the most celebrated names in metaphysical reasoning. Against the decision of one of them, I have ventured to assert the existence of human instincts, natural as well as moral ; and to dispute, against

the sentence of the other two, the existence of animal souls. I now particularly advert to these subjects, as they afford me the opportunity of deducing, in conclusion, from the fallibility of such authorities as Clarke, Locke and Butler, unquestionably among the most celebrated names in metaphysical reasoning, an argument of no trivial weight, in favor of the divine authority, on which the scripture view of those doctrines claims our unqualified admission. Upon those subjects, in which reasoners of their powers have failed, while its decisions prove so wonderfully consistent with the last results of philosophic inquiry, prosecuted through so many centuries; the difficulties in which inquiry was involved admitted of no explanation, but on the assumption of the most extravagant suppositions, which increase in their extravagancy, as we ascend to more ancient periods. The doctrine, not merely of the preëxistence, but of the transmigration of souls, which was once universally, as it is still widely prevalent among the oriental sages, will illustrate the nature of the sources from which the inspired writers must have exclusively drawn, had they accommodated their writings to the prevailing mode in philosophy. The accuracy of their views admits but of the one explanation; as it is not to be traced from a human source, it must be deduced from a divine.

LECTURE V.

1 COR. XV. 48, 49, 50.

As is the earthy, such are they also that are earthy : and as is the heavenly, such are they also that are heavenly. And as we have borne the image of the earthy, we shall also bear the image of the heavenly. Now this I say, brethren, that flesh and blood cannot inherit the kingdom of God ; neither doth corruption inherit incorruption. Behold, I shew you a mystery ; We shall not all sleep, but we shall all be changed.

BEFORE our nature sustained that vast change, by which “the heavenly image” was superseded by “the earthy,” and it was reduced to the corruptible and mortal state which is described in these words, the material elements of which it was composed were adapted to the immaterial. That opposition between reason and passion, which is termed the contest of “the inner and the outward man,” was then unknown ; the natural propensity having a tendency, like the moral bias, in the direction of good, without any deflection towards evil. The state of innocence in which the being thus formed was originally placed, was equally adapted to the nature with which he was endowed. It

was consequently rendered exempt from moral and physical ill;—constituted alike to ensure the happiness of the creature, and to evince the goodness, as well as the power and wisdom of the Creator.

This state was however probationary, and as the term implies, it was consequently a state of temptation. To one trial, the human pair, originally placed in this state of innocence and beatitude, was exposed; and with the consistency which pervades the entire narrative of their fall, this trial is represented as adapted precisely to the circumstances in which they were put on their probation. Besides the trees, which with a spontaneous fertility supplied all the natural wants, which they felt; in the centre of the garden, which it was their only occupation to tend, were placed two that possessed the contrary properties of prolonging life, and of imparting mortality. The latter was chosen to furnish a test of their obedience. While they were given permission to partake of every tree, this alone was excepted; an express command being enjoined, that they should not eat of it, and a penalty annexed to the breach of it, that “in the day that they eat of it they should be
“subject to death.”

I. From the infraction of this commandment, not only the moral evil with which the world became infected, but the physical with which

our nature became polluted, is represented as having exclusively issued. It belongs more immediately to the province of him who undertakes to trace the analogy of Revealed and Natural Religion, to reconcile the pernicious consequences which thus ensued with the attributes and dispensations of the Creator. In the task which I have essayed, my engagement will be performed, if the origin which Revelation ascribes to evil, natural and moral, can be proved consonant to the principles of ethical and physiological Science.

1. To form any just notion of the physical efficacy with which the forbidden fruit was endowed; in order to judge of the fitness with which it was adapted, as means to a specific end; we must estimate its effects, in the change produced in our nature. As the soul in its creation, comes undefiled from the hand of its Maker, and derives its pollution only by communication from the body; the corruption which was contracted in the original transgression, is represented as properly seated in "the flesh and its members." With a consistency which is strictly philosophical, the cause and the effect are alike represented as physical. As the corruption, thus incurred, is justly supposed to consist in the concupiscible and irascible affections, of which our nature then became for the first time sensible; in equal consistency with the

same principles, may we conclude, that a susceptibility to excitement was imparted to the constitution, whereby either passion became consequently inflamed, as any object presented itself which was calculated to awaken desire or resentment. At the different periods of infancy and old-age, one of those affections, which exercise a joint tyranny over our nature in the time of its vigor, is destitute of force, the other not having attained, or having exhausted its power. By comparing the moment of respite enjoyed at each period of life, from the turbulence of emotion, with the intervening time of passionate excitement, some idea may be formed of the change operated in our constitution at the fall; to which the physical and moral evil that ensued, succeeded in the order of natural consequence. As our nature became debilitated by the infection, and exhausted by the indulgence of passion, it was rendered an easy prey to disease, until death finally closed the period of existence. From the affections, thus exerted, as objects of desire or aversion called them into action, the whole of the moral evil, which succeeded, arose, when “the earth was *corrupt* before God, and was filled with *violence*.”

If we may assume, what the consequences that ensued seem fully to justify, that the forbidden fruit possessed the deleterious qualities, which were calculated to change the humors

of the blood, and to render the constitution in this manner subject to passionate excitement ; from the physical cause, thus hypothetically assumed, the consequences that followed are simply and naturally deducible. Such medical properties, it admits not of doubt, might exist in vegetables, as would be competent to effect such changes in our nature. By operating as powerful stimulants upon the blood, they might infect the vital system, and excite the animal passions ; and with the subtilty of a slow poison, sow the seeds of disease in the frame, which would gradually undermine its strength, and atlength occasion its dissolution. In our observation of the hereditary transmission of disease, we may perceive the philosophical possibility, that a nature, thus vitiated, might be perpetuated to the latest posterity. As Adam thus rendered his nature corrupt, such would be the nature of his descendants ; susceptible of the same passions, and liable to the same mortality.

2. But these speculative notions are no further entitled to respect, than as they admit of a practical application ; they may be, however, easily identified in the narrative of the original transgression. It is scarcely deserving of particular remark, that the contrary states in which the offenders were placed, before and after the fall, admit of a direct illustration from the different periods of childhood and old-age, in which

the concupiscible passions are not yet developed, or are wholly subdued. We thus see contrasted, in the range of our own observation, the state of innocence, in which “they were naked, “and were not ashamed;” and of knowledge, in which from the sense “of good and evil,” they became instinctively conscious of that emotion.

The consciousness of shame is represented exclusively as the effect produced by the eating of the fruit; for though the crime is described as attended also with fear, the apprehension with which the culprits were driven to seek concealment from the presence of the Lord, is represented as excited by the voice which summoned them to judgment. And from the nature of that emotion, of which they were sensible, we may collect, in what sense the tree of which they partook was termed “the tree of the knowledge of good and evil;” and may thus arrive at a juster view of the effects which it was calculated to produce, and which occasioned its receiving that appellation. A sense of shame involves in it a “knowledge” of the bitter effects of some “evil” which has been preferred, and some “good” which has been rejected, at the suggestion of passion. And this is the necessary result of such an election, whatever be the passion by which it is prompted; whether it be that which is instigated by desire, or is inflamed

by resentment. It is indeed not improbably supposed, that upon the act of disobedience, when a stimulant until then unknown was given to the passions, the perpetrators resigned themselves to sensual indulgence; and that those compunctious visitings consequently succeeded, which their state of exposure rendered more poignant, as laying them open to observation.

That in this explanation no undue licence is taken with the sacred text, seems to follow from the description given by the Apostle of the operation of sin; of the origin of which, the account before us professes to be a narrative. In describing the effects with which the perpetration of it is attended, he represents the mind as distracted by conflicting feelings, as compelled to approve of what is good, although gratified in following what is evil. “For the good that I
“ would I do not; but the evil which I would
“ not, that I do I find then a law, that,
“ when I would do good, evil is present with
“ me. For I delight in the law of God after the
“ inward man: but I see another law in my
“ members, warring against the law of my mind,
“ and bringing me into captivity to the law of
“ sin which is in my members. O wretched man
“ that I am! who shall deliver me from the body
“ of this death?” Whatever circumstances may be conceived to have followed or aggravated the crime of the primitive transgressors; in this pas-

sage, it is obvious, the Apostle describes the operation and effects of the sin termed *original*, which has been entailed by them on our nature. While he reduces it to that moral instinct, which enables us to distinguish between good and evil; disposing us to choose and approve of the one, while we follow and condemn the other; he offers the most satisfactory explanation of that “knowledge of good and evil,” which was the sad compensation for the loss of innocence and felicity.

3. Whatever objections have been raised, on the difficulty of reconciling the introduction of sin into the world, with the power and goodness of God; they atonce disappear, on considering the state in which man was placed, as probationary. As in the notion of such a state it is necessarily implied, that a freedom of choice be allowed between good and evil: that a bad election is made is consequently chargeable only upon him, who unwisely and criminally abuses his freedom. While the origin of evil, of consequence, furnishes no ground of reply against the Deity; in the method in which it was permitted, and the consequences to which it is rendered subservient, his goodness and beneficence are equally vindicated. For those attributes are not less conspicuously displayed, in the manner in which the trial of human obedience was originally made, and those propensities have been

transmitted to our nature, by which it is still perpetuated.

The probationer, in being put to the test, was placed in a state of that moral and physical perfection, which deprived him of the inducement and the pretext for transgression. All his natural wants were not only satisfied, but his innocent wishes anticipated. He was enjoined but a solitary command, that merely of abstinence, where no desire remained to be gratified. While no temptation was proposed, which it required fortitude to resist; the heaviest penalty was denounced against transgression. As far, therefore, as it was possible to leave a free-agent an election, while submitted to a trial of obedience, care was beneficently taken, that he should be armed with the means of resistance. He was indeed left exposed to the designs of a subtle adversary, without whose machinations we cannot conceive he could have fallen; but there had been no temptation, had there been no solicitation, to error. And as the insinuations of the seducer and betrayer had no real weight, when opposed to the express commands of a Creator and benefactor; they should have been without effect or influence, more especially on a point where the divine will had been explicitly declared, and an express commandment enjoined.

Nor were the purity and goodness of God

more consistently maintained, in the nature of the temptation, by which the first probationer was tried; and in the method in which that infection was imparted to his nature, through which his descendants are still subjected to trial. The command enjoined on him was limited to an act, in itself indifferent; which involved, in its infraction, no aggravation of criminality beyond the disobedience of a positive precept. Care was thus beneficently and providentially taken, that the crime of disobedience should not be heightened by moral pravity; and that while the culprit was guilty of transgression, in his act of rebellion against God, he should no further sin against nature and conscience. Nor are the marks of goodness and purity, which characterise all the appointments of the Divinity less conspicuous in the method in which the infection, thus imbibed, has been communicated to his descendants. As “the tree of the knowledge of good and evil,” like all the works of its adorable Maker, was declared to be “very good;” in its natural properties, it was without doubt beneficial and useful. From its interdicted use alone, could any pernicious consequence arise. And even while its intention was abused and perverted, the pernicious effects of which it was the undesigned cause, were not left without mitigation. They brought, together, with a propensity to sin, and an expe-

rience of its effects, “the knowledge of good and evil;” which however unavailing in preventing vice, was atleast efficacious in restraining it.

When the divine dispensation has been vindicated from misconception and obloquy, in the first introduction of evil; the difficulties, in which the question of its origin and extent is involved, present no objection that admits not of an effectual answer. In reconciling its prevalence with the goodness and benevolence of the Deity, a solution has been found for every doubt, in the operation of his general providence, in rendering particular evil conducive to the common advantage, and in the agency of his special providence, in converting it into positive good. Of the method in which the divine economy works, in securing both these ends, the writers who have professedly treated on the origin of evil have multiplied proofs, and illustrated them by argument and example. The principle, however, equally admits of being illustrated and confirmed in the Scripture account of the fall; and the instances in which it is verified are deserving of notice, as tending to vindicate the divine attributes, and to display the plenitude of the light imparted to us by Revelation.

In the opposition which is expressed in the text, which proclaims our recovery through

Christ of all that was forfeited by Adam, an instance occurs, when compared with which, all that imagination can conceive sinks into utter insignificance. Although it was reserved for that fulness of time, when mankind were prepared to sustain the brightness of meridian light, to reveal the divine scheme, in which evil was compensated by good ; its dawning glories appeared, from the first announcement that the author of evil should be crushed “ by the Seed “ of the woman.” In the view which was thence unfolded to us of the divine economy, the goodness and beneficence of God exhibited themselves under the new and endearing light of forgiveness and mercy ; and a farther way was revealed, in which we beheld it manifested, in the form of long-suffering and forbearance. In the reiterated proof which we thus received of those divine attributes, they appealed with more force to the best feelings of our nature, as addressing our love and gratitude, while they awakened a deep contrition for the past, and a holy resolution for the future. Nor are they less signally displayed, in the method in which the purpose thus graciously conceived is carried into effect ; as the privilege, which was abused, forfeited, and gratuitously restored, is still offered to the thankless and obdurate ; “ God’s Spirit striving” with them, even while they despise and reject it.

Among the instances on which moralists are accustomed to dwell, in illustrating the mysterious ways of providence, in converting evil into good, none are insisted on with more force or eloquence, than the method in which death itself, the last and heaviest ill entailed on humanity, has been converted into a blessing. As they have justly observed, if life which was rendered burdensome by the growing ills imposed by wilful transgression on our nature, in the mental and bodily infirmity contracted in the fall, had been infinitely protracted; of all the heavy consequences which it has transmitted, it must have been the most insupportable. When the origin of evil is referred to its true cause, in the abuse of that freedom which was necessary to an accountable agent; and death is regarded as a release from the state of existence, in which life is oppressed with the increasing weight of natural and moral disease; its character, with reference to good and evil, cannot be long mistaken. That in this view, the sentence in which it was denounced, as the penalty of sin, must be regarded, is clearly established by the difficulties with which any other view encumbers the sense of the scripture narrative. In reference to the illusory promise, by which the seducer had succeeded in his design, that “they should be as gods, knowing good and evil;” the Divine Judge, tempering justice with mercy,

while he resigned the transgressors to the evil consequences which they had brought on themselves, deprived them of the means of rendering them perpetual : “ and now, lest he put forth his “ hand, and take also of the tree of life, and “ live for ever : therefore the Lord God sent him “ forth from the garden of Eden, to till the ground “ from whence he was taken.”

Whatever be the difficulties, in which the question of the origin and prevalence of evil is involved, on the principles of the Moral Philosopher ; in the scheme of Revealed Religion they are fully cleared up, and in a manner which is perfectly consistent with the nature and attributes of the Divinity. From the necessary constitution of things, an opening was made for the introduction of evil ; it being impossible, as involving a direct contradiction, that the agent, who was left free to choose, should be restricted from making an election, though his choice was erroneous and pernicious. In the consequences which thus ensued, the goodness and benevolence of God can be no further conceived to be implicated, than in providing an adequate remedy for that which as past was irreversible ; and this, it admits not of dispute, is supplied in Revelation. In the restitution, in which the effects of sin are repaired, the mortality incurred through Adam, is not merely superseded by the immortality imparted by Christ ; but

means are graciously provided, to cancel and repair antecedent and unavoidable frailty, and to minister direction and aid against subsequent lapses in error. A moral system, embracing every contingency of human conduct, and having purity and peace for its object, is promulged ; which is so comprehensive and practical, that it is deducible from a single maxim, and has been made sensible in a living and faultless exemplar. By this system, when reduced into practice, moral evil is necessarily extinguished, and natural immeasurably reduced ; and when, from the necessary constitution of a probationary state, it cannot be prevented, is effectually remedied. In that state, from which the one is shut out, the other so far as it originates in corruption and violence, must be excluded : for these can have no place, where a Religion of purity and peace is sincerely adopted. As to the small portion of natural ill, which will still remain at the bottom of the cup of life ; its salutary nature leaves it doubtful, how far it can be properly considered pernicious, as it may conduce to moral restraint and discipline. While by working on our sympathies, it operates as a preventive to violence or oppression, by which it is chiefly produced ; as it employs the active charities of one part of mankind, and exercises the patience and resignation of another ; it must take its appellation

from its moral uses, not its inherent qualities, and thus assume the contrary character to that of evil. If in the confined prospect which bounds our present views, any apparent inconsistency between the divine dispensations and attributes arises ; its reconciliation must be sought, in that higher and better state, to which our present abode is but a place of preparation and passage. There, all that is here given up to a temporary derangement, for wise and necessary ends, will be without doubt fully and finally rectified, and “ our light affliction, which is but for a moment, “ work for us a far more exceeding and eternal weight of glory.” Whatever, therefore, be the test by which the scheme of Revelation is tried ; whether it be estimated by the attributes of the Deity or the constitution of our nature ; by the immutable principles of good and evil, or the decisions of ethical and physiological science ; under every trial it bears testimony to the goodness and benevolence of its Author, not less striking than the works of nature supply of his power and wisdom.

II. Had Revelation been silent on the longevity enjoyed in the patriarchal age, after the period of human life had been limited, by the penal consequences of transgression ; we might naturally conclude from the provision originally made for its unlimited extension, that when first reduced, it far exceeded the narrow limits to

which it was finally contracted. The testimony transmitted from antiquity, by sacred writers as well as profane, is constant in establishing the truth of the assumption. When, indeed, we consider the tardiness and difficulty, with which the little knowledge, that might be attained by experience in the primitive ages, was acquired; and compare it with the advantages which we derive from an immediate access to the wisdom of ages, as committed to permanent records: we must acknowledge, that to place the original inhabitants of the earth on any terms of equality with their successors; their lives should have greatly exceeded the present period of human existence.

But after the utmost latitude is assigned the period of human life which probability will warrant, the scripture history will doubtless appear far to exceed it, in extending the patriarchal longevity to nearly one thousand years. In no instance, perhaps, is the charge of maintaining a false philosophy urged against the inspired text with equal appearance of justice. After every allowance is made for the difference of atmospheric temperature, when the year was not subject to variation and extremes in its vicissitudes; and in the human constitution, when the frame was unenfeebled by luxury and hereditary disease; the inordinate length ascribed to human life still appears to be exposed to

physiological objections, that require to be cleared up or refuted.

1. The speediest course for disposing of a passage, which defies the skill of a commentator, lies in rejecting it as an interpolation. But in those passages which assert the inordinate longevity of the patriarchs, the original text and the ancient versions preserve an extraordinary coincidence ; which is rendered more striking by the discrepancies, which they exhibit in recording the time of their paternity, in estimating which they generally differ a century. While the coincidence of the ancient text and versions leaves no ground for suspecting the authenticity of those passages ; their discrepancy affords the strongest foundation for supposing, that they admit of considerable latitude of interpretation. And the supposition is fully justified by the equivocal meaning of the term *year*, which in those primitive ages, when the period of life is assigned so inordinate an extent, expressed a very limited period.

Among the earliest nations who undertook to establish a measure of time, under that ambiguous term, were the Egyptians. The native interpreters of their ancient annals have observed, that the year was originally computed at different lengths ; having been first limited to one month, and then extended to three. It would seem not unreasonable to suppose, that it

is by years of the latter extent, the patriarchal age has been computed in the Jewish records ; as it is certain the correspondent time was reckoned in the Egyptian. For this consideration is not among the least convincing of the many arising from the external and internal evidence, which recommend this view of the difficulty, as leading to its true solution.

On reverting to the traditionary source, from whence it is probable the Jewish historian derived his knowledge of the primitive ages ; the founder of the early reputation in letters, enjoyed by the nation among whom he was educated, was the mystagogue, whom I formerly had occasion to mention. This personage, who was confessedly of foreign and Phenician origin, appears from a collation of the Hebrew and Egyptian schemes of chronology, to have flourished in the times of Joseph the son of Jacob. Whatever doubt may be indulged, that the traditions respecting the Egyptian hierophant consist merely of fragments of the patriarch's history ; it is certain, that from him, the Egyptians received, according to their own confession, their knowledge of the division of time. As the native priests, in deriving their information from this personage, who if not identical with Joseph, was atleast his contemporary, might have drawn from the highest and purest source in the Hebrew traditions ; from them it might have been

directly acquired by Moses, who was versed in all their learning.

If it be allowed, that the Hebrew lawgiver followed his Egyptian instructors, in his computation of the antediluvian chronology ; all controversy, on the length of the year which he employed in it, must be at an end. In the age of the demigods, which corresponded with the times of the antediluvian patriarchs, a succession of ten persons is enumerated, as well in the profane as the sacred annals. The Egyptians reckoned so many monarchs precisely from Horus to Menes inclusive, the circumstances of whose history identify them respectively with Adam and Noah ; and the coincidence is observed to extend to the Chaldeans, who numbered as many princes before the deluge from Alorus to Xisuthrus. But what is of most importance to our present purpose, the whole of the intervening period was computed by the Egyptians, in years, not of twelve months but of three.

Having so far authority for applying a measure of time thus contracted to the antediluvian era ; we are fully borne out by the internal evidence of the sacred text, in applying it in explanation of the patriarchal ages. As on substituting, for years of twelve months, seasons merely of three, they will be reduced to one fourth of their present inordinate length, and

will be thus brought within natural and probable limits. On assuming this standard of measure, and computing from the Hebrew text, in preference to the Samaritan and Septuagint; we thence ascertain, that in the Sacred History, the period of human life is rated from about two hundred and twenty to two hundred and forty years; and that of paternity is dated from the sixteenth to the fortyseventh year of each of the patriarchs. As it appears, on every sound physiological principle, that the period of puberty has remained, in all ages of the world, nearly the same, while that of life has varied with circumstances; and as it equally appears, from the common suffrage of antiquity, that the lives of mankind in the primitive ages greatly exceeded the present standard, at which they have immemorially continued; the length at which the patriarchal longevity has been computed offers no apparent violence to nature or experience. For one instance has occurred in our own nation of a person, whose life, in exceeding two centuries, was nearly protracted to that length; and more than one has occurred of persons whose ages have considerably exceeded two thirds of it. It should be likewise observed, that from these instances, it does not appear, the period of puberty, like that of life, was protracted beyond the usual standard.

2. Of the preceding view of the patriarchal longevity, no small confirmation may be deduced, from those sciences, with which the Scripture account is supposed to be irreconcilably at variance. As the exposition which has been just hazarded derives corroboration from many astronomical and physiological considerations; it cannot be deemed beside my purpose to dwell a little longer on the confirmation of which it is susceptible on this head, as well as on the objections to which it is liable.

(1.) On estimating the methods, which we are assured the patriarchs observed, in computing the course of time; the statement given of them by the Egyptians, bears impressed on it the marks of fidelity to the testimony of primeval tradition. They are such as would be naturally suggested by the appearances of the heavenly motions, to the inexperienced observer of the early ages. If it be conceived, that the perpendicular position of the earth's axis to the plane of its orbit was not altered before the deluge; the distribution of time by the year and its vicissitudes, as among us, must have been impracticable; as that natural division of its progress arises solely from the obliquity, which according to this assumption it then first acquired. The antediluvians would be thus driven upon such expedients as would lead to the results

described by the Egyptians. As the solar revolutions would succeed each other without any perceptible distinction, the year would be thus undefined ; and if even capable of being determined, would be unsuitable to practical uses. But although it was not marked by the succession and return of the seasons ; the sun, by its annual change of place, would exhibit the more conspicuous constellations in those parts of the heavens which are rendered remarkable by his daily motion. On marking the times, when these striking phenomena were observed in the several places where he rose, set, and attained his meridian elevation ; the antediluvians might have easily attained a natural division of time, analogous to the distribution of the year by the seasons. Nor is this supposition merely supported by its internal consistency, and its conformity to the Egyptian traditions ; but receives confirmation from one of the sacred books, which is particularly descriptive of the patriarchal manners, and yields in antiquity to no extant record. From this early document it is manifest, that by such appearances the return of the seasons was absolutely determined.

If it be, however, supposed, on the other hand, that the earth has maintained the present obliquity of its axis from the creation ; a like division of the year would be naturally suggested to the primitive observers, by the sun's reces-

sion from the east and west points, to those parts of the horizon where his orbitive amplitude is greatest. In favor of this supposition, it must be admitted, that, on the assumption of its truth, the Egyptian tradition of the length of the primitive year appears to be founded. That such a division of time was really in use, appears from the testimony of the earliest writers among the Greeks ; who derived their rural calendars, with their agricultural knowledge, from Egypt. The method of distributing the year into seasons by the sun's entrance into the four points termed *tropes*, from whence the tropics afterwards derived their name, was imported from that country into Greece, and long observed by the natives, who first cultivated astronomy as a science.

While the subject, as thus regarded in an astronomical view, acquires additional confirmation from science ; on considering it in its chronological consequences, it appears at first sight exposed to a fatal objection. The entire course of time, in the antediluvian era, is computed in successive periods, each of which extends from the birth of the several patriarchs to the year when they became fathers. As the entire succession is computed in ordinary years, on substituting seasons consisting merely of three months in place of them ; such is the reduction which the entire term from the Creation to the

Deluge sustains, by the change, that, on admitting it, the received system of antediluvian chronology appears at first sight to be fundamentally subverted.

In reply to this objection, it must be observed, that it presents but a choice of difficulties ; and the alternative in which it is implied, that the period of paternity was deferred to the hundred and thirtieth year, is not encumbered with the least or fewest. On taking the term *year* in its usual and extensive acceptation, such was the period nearly which Adam was compelled to wait, before the loss of Abel and the exile of Cain was compensated by the birth of Seth : not to insist on the numberless inconsistencies which such a mode of computing introduces into any calculation of the original population of the world.

But the objection may be met by a direct reply. Nor can it be more appositely deduced, than from the authority which has supplied the solution of the main difficulty before us. The Egyptians, in fact, who have suggested the true length of the antediluvian year, have determined an epoch and term of natural years, from which the entire series of time, from the Creation to the Deluge, may be computed at the same rate precisely, as in the common scheme of Scripture Chronology.

From a coincidence so extraordinary, and the

discrepancy observable in the original text and the early versions, in recording the term of the patriarchal successions ; it seems reasonable to conclude, that, by the accommodation of a single date in the series, it has been fitted to mark the proper length of the antediluvian era. If the successions derived from Cain and Seth be inspected near the close, it will be observed, that they terminate in the same names. When this observation is connected with the fact expressly on record, that the two lines became intermixed before the Deluge ; it justifies the suspicion, that from the time of the intermixture, the account of the succession has been discontinued by the sacred historian. And with this supposition the particular epoch which has been suggested from the Egyptian computation, for connecting the chronological series wonderfully coincides. It professes to mark the exact date of this intermixture of the two lines descended from Adam ; and of the mode of computing the succession of years, by the revolution of the sun from a particular point in the heavens. To the facts imparted in this statement the greater value attaches, as they supply the necessary data for determining the length of the antediluvian era, which the preceding hypothesis may be conceived to render ambiguous. It is likewise of importance to observe, that it may be not less certainly ascertained from the patriarchal

successions as they now stand ; on the supposition that they were originally accommodated, or were accidentally formed, to mark the precise extent of that period. That such was the intention of those, who have left the sacred text in the state in which it is now found ; the bare inspection of it places beyond controversy.

(2.) The chronological objections being thus removed ; the view which has been hazarded on the subject of the patriarchal longevity may receive positive confirmation from the science with which it appears to be more immediately implicated. An example having been cited of the extension of human life, to within a short interval of the period which the patriarchs appear to have attained ; the physiological difficulties in which the consideration of their age is involved diminish in their force. If it can be now shewn, in conformity to the principles of that science, that what forms the exception in our times most probably constituted the rule in theirs ; that in fact, from the constitution of nature, instances of senile dissolution, such as have been noticed, were originally as general as they are now rare ; the last objection to which the subject is exposed will necessarily vanish.

That the position which is here assumed was really matter of fact, appears from the positive testimony of the ancients which has been al-

ready cited: and from the examples of longevity among the moderns, which have been incidentally noticed, their testimony derives the fullest confirmation. To give the position that generality which is necessary to its validity, a few considerations, deduced from the causes to which *life* and *mortality* are generally imputed by physiologists, will be sufficient.

The vital forces on which either alternative is conceived to depend, are generally referred to the arterial and venous system; the impulsive, which are so termed, as communicated from the centre of motion in the heart, being seated in the former, and the repulsive, which are so called, as acting in the contrary direction, being situated in the latter. In the middle period of life, we are assured, they maintain an equilibrium; the impulsive predominating before that time, and the repulsive after it. The change which is thus effected in the constitution is partly caused by the nature of the forces themselves, which produce a pressure and resistance that diminishes their action, while they impart that consistency and increase which is necessary to the state of adolescence. It is partly occasioned by the phosphato-calcareous matter which they contribute to form and deposit, and which from being necessary to give solidity to the parts in the earlier period of life, become the cause of their rigidity in the latter. As long

as the balance between these forces is preserved, the vital principle suffers no diminution; but when from the coats of the arteries being thickened, the repulsive prevail over the impulsive, the period of decline commences. A rigidity and denseness is thence imparted not merely to the arteries but to the bones and muscles, the glands and viscera. An induration of the entire frame consequently succeeds, and the vessels being proportionally affected, the absorbent and secreting processes are necessarily impeded. The function of the heart is thenceforth performed with difficulty, the voluntary and vital muscles having in turn lost their action; the communication of the circulation to the lungs and brain is at length suspended, and the motion of the vital machine soon totally ceases.

Among the causes which contribute to longevity, the organisation, climate and mode of living are chiefly enumerated: each of which must have respectively contributed to the prolongation of life in the primitive ages. As we ascend to these rude, unsophisticated times, the probabilities encrease, that the organisation preserved the perfection, in which it is only reasonable to suppose it was originally created. It must have been at least exempt from the pernicious consequences which vice and luxury have entailed on our nature; and which experience assures

us may be transmitted, and may abridge the period of life, for successive generations. As the possibility is proved, by a few instances, that it might have been prolonged, to the extent recorded in the inspired writings; the testimony borne by antiquity, that such was positively the fact, requires no further confirmation. Of the instances of a patriarchal longevity, which have been noticed, as occurring in modern times, it is observable, that it was hereditary; having continued in one family for four generations, and was thus obviously transmitted with a vigorous constitution. On no rational ground of analogy can the primitive times be excepted from the principle, which this induction of facts is sufficient to establish.

Among the causes which are conducive to the same effect, the nature of the climate and the mode of life have been already specified. And from every notion that can be formed of the patriarchal state, both must have contributed to maintain that equilibrium in the vital forces, on which the extension of human life is supposed to depend. Where the atmosphere was tranquil and the current of life equable, the machine must have been liable to no perturbation from external causes, by which its action could be impeded or suspended. The examples of longevity in modern times, of which we have any account, are deduced from that rank in life,

or those tracts of country, where the simple and frugal habits were most likely to prevail: for which the primitive and patriarchal ages may be naturally supposed to have been distinguished. A remarkable instance of the effects of temperance, in extending the period of human existence, is on record; one life having been prolonged to nearly half the patriarchal standard, by the observance of a strict regimen, where a premature feebleness of frame promised an early dissolution.

From the complicated nature of the human frame and constitution, and the boundless variety in the atmosphere and aliment, on which the state of the blood depends; it seems not possible to determine *à priori* what concurrence of physical causes contributed to the extension of the lives of the patriarchs. If we follow some eminent physiologists in supposing, that the gradual decline which terminates in senile dissolution, depends on the phosphate and carbonate of lime, which are deposited in the system, through the medium of the circulation; it may be readily conceived, that many natural causes might have concurred, in preserving the blood from imbibing the saline elements which occasion those deposits; or in preventing the osseous system, from separating them from the circulation, and fixing them in the constitution. The entire muscular system, to which they generally

impart a rigidity, would be thus retained in a state of pliability; that, in promoting a freedom of motion, would ensure its perpetuity. Nor is it improbable, that the atmosphere and circulating system might have been so adapted to each other, as to preserve the balance in the vital forces; to maintain which, and to prolong life, differ but in the mode of expression. The activity of the circulation depends on the external pressure of the air; and the state of the blood on the gases disengaged from it. Not to insist on the happy effects of a perennial spring, unexposed to the oppressive extremes of heat and cold; a pure atmosphere and salubrious climate, in contributing to health, must have been conducive to longevity. When we take into our estimate, that freedom from derangement and disturbance, to which our present artificial state is exposed; that exemption from the perturbed passions and active pursuits, which occasion a constant waste of the vital powers; the difference by which the patriarchal and the present ages are distinguished, will not appear greater than the circumstances, under which they were respectively placed, fully justifies us in supposing.

III. Although the purity of the patriarchal life procured an extension of its term; the primitive age was not more exempt than the present, from the penal consequences, denounced

against transgression. For the mortality, to which we have been thus rendered obnoxious in common, an effectual remedy has been, however, graciously provided; in which the power and goodness of God are not less conspicuously displayed, than in the creation of a race, who were endowed with a capacity for happiness, and supplied with the amplest means of enjoyment. As the consequences of the fall were universal, such will be the effects of the recovery. "For," as the Apostle declares, in introducing the subject of the text;—"since by man came "*death*, by man came also the *resurrection* of the "dead. For as in Adam all *die*, even so in "Christ shall *all* be made *alive*." Nor is immortality the only boon, that, after it had been forfeited, was gratuitously restored. The divine image in which man was originally formed, although obliterated by sin, may be again recovered. For we have the same infallible authority to assure us, that "as we have borne the "image of the earthy, we shall also bear the "image of the heavenly."

The Apostle, in describing this mysterious transition from mortality to immortality, represents it as affected by a change of our corruptible nature, into an incorruptible. The glorious forms, as he assures us in the text, with which we shall be raised up, will be of a constitution essentially distinct from our present carnal bodies.

“ Now this I say, brethren, that flesh and blood
“ cannot inherit the kingdom of God ; neither
“ doth corruption inherit incorruption.” The
different ends, which are to be attained in a
probationary and a glorified state, require a cor-
respondent change in our nature. As the or-
ganic or vital functions are exclusively adapted
to the circumstances of our present existence ;
in which they are subservient to the temporary
purposes, of preserving and perpetuating the
species ; they are represented, as designed to
cease, on the accomplishment of the object for
which they were intended. To the same effect,
we are assured, and on the same authority, that
the natural functions are prescribed an equally
limited duration with the vital : “ meats for the
“ belly and the belly for meats ; but God shall
“ destroy both it and them.”

From these general observations, it may be
gathered, that the scheme of Revelation is not
less distinguished by the consistency of its several
parts, than the wisdom and beneficence of the
end which it generally purposes. In the parti-
cular views which it opens to us of the nature
of the body, in the transition that it is destined
to undergo ; the Scripture so far conforms to the
decisions of Science, as it comports with the
principles of reason. In the description given
by Revelation of the different states through
which we are to pass, matter still remains for

philosophical investigation. To the life which it ascribes the body, in its mortal state, and that which it assigns it, in its immortal, some physical difficulties may be objected. It cannot, therefore, be deemed irrelevant from my purpose to inquire, how far, upon these points which have exercised the cavils of the sceptic, the analogy extends between the doctrines of Scripture and the discoveries of Science.

1. Physiologists of the greatest celebrity have found it expedient to divide their science, according to the different *functions* of animated beings; understanding by this term *the exercise of the organs*, with which they are endued. Three kinds are accordingly distinguished by them, to which they give the name of vital, natural and animal. As the object of our present consideration is the nature of *life*; the two last may be excepted from our immediate inquiries, as wholly beside our purpose. The *vital* functions remain, with which we are exclusively concerned; and of which we are further informed, that they are performed by the heart, the lungs and the brain. From the influence which these organs exert upon life, they receive their particular designation. It ceases in fact to exist, when the action between them is interrupted. When indeed the agency of any one of these organs is suspended, the others (with a trifling exception on the part of the lungs) forbear to

act, and where the action cannot be restored, vitality is consequently extinguished.

The medium, however, through which this action is communicated, and the vital functions performed, is the blood; which in circulating through the system, completes its course with an extraordinary rapidity. And whatever be the point at which the first motion is communicated; the heart is confessedly the place from whence it is perpetuated by successive impulses. Of the vital organs, it is properly considered the spring and fountain of life; not merely as it is the central point of that which exists in the arterial system, but as it is connected with the nervous and sensient, and with all the instrumental parts of vitality. The blood, however, is not merely the medium of communication between those organs; but the exciting cause of that motion in the heart, on which their common action depends, the cessation of which is the extinction of vitality.

Nor should this fluid be regarded as the source of vitality, rather on account of its operations, than its nature and properties. All the vital forces and organs contribute to form it; and from it every part of the animal system derives nutrition and reparation. It is an axiom in physiology, that the integrity of life and sensation depends no less upon the healthy state of this fluid, and its continued access to the brain,

than on the soundness of the organisation. By how slight a partition it is separated from the solids, which it nourishes and repairs, is evinced by the theories in which it is accounted liquid flesh, and is supposed to exhibit every vital property which they manifest.

When these cursory observations are taken in explanation of the scripture doctrine of life ; no time need be employed, in pointing out its philosophic correctness. The inspiration of the writer being admitted, it can excite no surprise, that his narrative should anticipate conclusions, at which the physiologist has been enabled to arrive, only by a painful inquiry and laborious induction. Whatever be the source from which it may be supposed he derived his knowledge, he represents it as imparted in the grant of animal food, immediately after the deluge. In recounting the permission then given to Noah, he represents, “ flesh, with the life thereof, which “ *is the blood* thereof,” as particularly excepted. On this distinction, the accuracy of which it remained for modern science to demonstrate, rest the grounds and reasons of sacrifice, as instituted in the Levitical dispensation. “ For the “ life of the flesh is the blood : and I have given “ it to you upon the altar to make an atone- “ ment for your souls, for it is the blood that “ maketh atonement for the soul.”

Against those who may be still disposed to

contend, that the excitation from whence the heart derives its action must be sought in some subtler agency, it may be maintained, that the blood is the medium through which it operates. Besides the chyle and blood, which are the same fluid in different states, physiologists reckon among the observed causes of this vital excitement, heat, oxygen and electricity. Of these causes, however, the last may be supposed to include both the antecedent. From the power of the electric fluid in evolving heat and oxygen, and its universal diffusion through nature, and in particular, through the bodies of animals; from its extraordinary effects in muscular excitement, even after the extinction of life; we may indeed conclude,—on the principle, that nature operates by the most simple and general laws,—that it is through it the impulse is communicated, by which vital action is perpetuated. But the blood is found to occupy a high place in the galvanic chain of oxidable substances by which electric action is produced, and is confessedly an exciting cause of motion in the heart. It may be consequently inferred that it is the medium, through which the electric energy is directly imparted, that propels the vital machinery: and may thus verify the declaration of Scripture, that “the life of the flesh is the blood.”

2. In the inveterate spirit of cavilling by

which Revelation has been assailed, objections have been raised to the notions which it inculcates, on the nature of the body, not merely in its mortal state, but its immortal. As the resurrection, indeed, is referred to the act of omnipotence, its moral possibility if not admitted, may be established and defended, on the analogy of the act of creation. For, it is readily concluded, and cannot be reasonably denied, that the power which has brought us into existence, at one time, must be competent to restore us to it at another. Objections, which lay claim to philosophical conclusiveness, have been, however, urged against the doctrine as revealed in the Scriptures. On the one hand, the physical impossibility has been urged, that the same body can be raised up, after the atoms of which it is composed have entered into new combinations, and have been successively compounded into vegetable and animal substances. On the other hand, the metaphysical impossibility has been objected, that the personal identity can be preserved, when the body is not merely changed, but is converted, from corruptible flesh and blood, into an immortal and glorified substance.

On the antecedent of these objections, it is needless to dwell; as it is wholly irrelevant to the notion which Revelation inculcates of the resurrection. Its futility will be directly ap-

parent, on reverting to the plain statement of Scripture. "So," observes the Apostle in opening the subject of the text, "is the resurrection of the body: it is sown in corruption, it is raised in incorruption; it is sown in dishonor, it is raised in glory; it is sown a natural body, it is raised a spiritual body." The body, it is therefore plain, will be changed from "natural to spiritual:" the objection merely applies to the resurrection of the same physical body.

The subsequent objection, it must be acknowledged, is thus left standing in full force: but when the mists are dispersed, in which the nature of personal identity is involved by metaphysicians, it will not appear to be formidable.

Philosophers, according to the favorite science to which they are devoted, deduce the proofs of their notions of personal identity, from physical or metaphysical principles. They consequently conclude, that to render a body identical, at different periods of time, it should either consist of the same substance, or retain a consciousness of that sameness. These conclusions, the latter of which is adopted merely to escape the physical objections to which the former is palpably exposed, are unfortunately liable alike to exception. If that be admitted, which cannot be fairly disputed, that the material part of our persons is in a continual flux; it

cannot be reasonably denied of the mental part,—when regarded independently of the spiritual,—which is of a more mutable nature. The admission of a perpetual change being considered fatal to the notion of identity in the one case ; it must be considered equally subversive of it in the other. We have the authority of the ablest physiologists, that by the continued operation of nutrition, circulation and secretion, the substance of which our bodies consists is subject to perpetual waste and reparation, so that, after the lapse of a few years, it is totally changed. As one third of our time is passed in sleep ; for so much of our lives, we either possess no consciousness of existence, or are liable so far to lose the sense of our identity as to conceive ourselves some other person than what we really are. Thus on the assumption of either principle, on which it is supposed our personal identity may be established ; it may be concluded, that after a short period, we are so far from being the same, that we are really different persons.

We are fortunately not dependant upon the results of such philosophical speculations, for the sense of our identity, at any two moments of our existence. We possess a conviction, which results not from reasoning, and admits not of being strengthened by proof, that we are the same, during the whole course of our lives ; and

as such may be rendered accountable at some time, for what has been done at an antecedent. From the idle speculations, however, by which a plain matter has been mystified, one important consequence may be fortunately deduced. In proving to us, that a total change of body and mind may take place, by which, as we are fully sensible, our personal identity cannot be affected ; they prove the futility of the objection which has been raised to the doctrine of the resurrection. For they furnish us with authority for concluding from science, that however the body may be affected, in undergoing that mysterious change, the person may still continue the same ; though “it is sown in corruption, and “ raised in incorruption ; though sown a natural “ body, and raised a spiritual body.”

But the obscurity in which metaphysical subtlety has but tended to involve this subject, at once clears up, on recurring to the plain, consistent philosophy of the Bible. From the scriptural proofs which have been adduced of the existence of *the soul*, it is obvious, that it is not in the mortal and mutable part, but in the immortal and immutable principle of our nature that personal identity is placed by Revelation. Though the body is not only changed or renewed, but put off and destroyed, the soul continues, in the strictest sense of the term, identical ; and as the personality continues in it,

beyond the accidental change which it undergoes by passing into a different state, it sustains no specific alteration. And this doctrine, as I formerly had occasion to observe, receives the fullest sanction from the most celebrated authorities in physiological and metaphysical science. The economy of nature appears inexplicable to them, unless on the supposition, that beings, endued with mental and corporal action, are composed of distinct substances, as essentially different as the effects which they are capable of producing. In the vital functions, which they conceive dependant on the conservative forces of nature, they acknowledge a distinction, that strikingly contrasts them with the intellectual and animal ; and it seems to intimate, that they were formed with a view to their final separation in another state of existence. Of the heart, lungs and brain, the organs by which the antecedent functions are performed, it is remarkable, that they act independently of the mind ; while the faculties and senses are placed, like the members, under its control and direction. We have a voluntary power of directing the latter to any particular object, while the former discharge their office without our will or observation, and would continue to act though we should desire their suspension. As it is only for the exercise or abuse of those powers which are placed under the guidance

of reason that we become accountable ; it has been with admirable consistency contrived, that the organs which perform a transient and secondary part should be rendered independant of the senses and faculties, that fit us alike for a state of probation and of reward and punishment.

3. The subject to which I have so far solicited attention, is of that varied, abstruse and complicated nature, that in treating on it, before investigation had been prosecuted minutely and extensively, the chance of avoiding error must have been deemed utterly hopeless. After the centuries, during which scientific inquiry has been pursued, that we should thus find its last and most certain results fully anticipated, while no fixed principle is transgressed, no ascertained truth is violated ; is surely a consequence which must be deduced from some cause, different from accident, if there be any certainty in the method of inference by which philosophy arrives at conclusiveness in its deductions. Yet on such grounds the scientific pretensions of the sacred writings rest ; in which this character has been uniformly sustained, in the various subjects which have passed under examination. If the superintendence of that Power, by which they profess to be inspired, be once admitted ; the subject will involve no difficulty requiring explanation. And if it be rejected, an impro-

bability must be allowed, to admit which requires a degree of credulity, far exceeding that which is necessary for the admission of the alternative.

To form any just estimate of the philosophic precision of Revelation, on the subjects which have passed under review, we should indeed consider the contradictions and absurdities, into which, not only the ancients, but the moderns have been led by their speculations on the nature of life, and the origin of evil. We should review the systems, devised by the Pantheist and Manichean, to dispose of these difficulties; to the gross errors of which Moses was so far superior, that the scheme of his theology, as I formerly had occasion to prove, is framed with a view to their subversion. We should proceed from the ancient sages to the modern philosophers and theologians; and survey the schemes of optimism and perfectibility, the system of free agency on the one side, and of irresistible necessity on the other. Notwithstanding the subtlety in moral and metaphysical disquisition for which the modern philosophy is justly celebrated; from the discussion of those points alone which have so long engaged our attention, the nature of personal identity and the origin of evil, ample materials might be drawn, for illustrating the contrast between the inspired and the fallible authority. The task would be at-

tended with little difficulty, to shew, that no human system was maintained, without a violation of some fundamental principle of reason : that in every attempt to reconcile the attributes of God with the nature of man, some sacrifice was made, that was either derogatory to the glory of the Creator, or subversive of the claims of the creature : while in the scriptural scheme, sovereignty and submission, prerogative and privilege, are happily adjusted, without any compromise of dignity on the one side, or arrogation of independence on the other.

For a difference thus wide and extraordinary no explanation will be needful, if the claims advanced by the authors of the sacred books be admitted ; that they deliver a communication from Him who can as little err Himself as conspire in deceiving others. If they are on the contrary disallowed, and, where there was no inducement to falsehood, the veracity of the assertion be disputed ; a difficulty will still remain, for which it seems not within the power of ingenuity to furnish a plausible solution.

LECTURE VI.

2 PET. III. 5, 6, 7.

For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water: whereby the world that then was, being overflowed with water, perished. But the heavens and the earth, which are now, by the same word are kept in store, reserved unto fire against the day of judgment and perdition of ungodly men.

FROM a contemplation of the works of creation, we may arrive, by a short deduction of reason, at a knowledge of the being and attributes of their divine Author: but an observance of the ordinary course of nature unfortunately induces us rather to doubt, than to acknowledge, that his special providence perpetually extends over his works. Although it is impossible to conceive, how a system of such intricate contrivance could have been first formed, it appears not difficult to imagine, how its existence and order might be preserved, without his immediate interposition. We are daily observers of the effects of those secondary causes, by which the complicated machine is carried on: we observe them work, with a constancy and uniformity, which in a great measure ensures the perpetuity of their operation. In the dif-

ferent impressions which the objects of faith and perception are calculated to have on the mind; "the things which are seen" bring a conviction to it, which is little experienced from "the things which are not seen." In the refuge, to which it betakes itself in scepticism, from the promises or denunciations of Revelation; it readily acquiesces in the plea of the scoffer, to which the apostle replies, that "all things continue as they were from the beginning of the creation."

Amid the regularity and harmony of nature, the course of divine providence has been so ordered, that the justice of the divine dispensations may be vindicated, and man left without justification or excuse. To the sceptic who closes his ears against the word of Revelation, the unwritten volume is unfolded; to which he appeals, in exculpation of his incredulity. While the book of nature, which is ever open to his inspection, brings attestation to the power and goodness of God, in the creation of the world; it bears witness to his justice and severity, in devoting it to destruction. Such is the force of the argument, as I formerly intimated, with which the sceptic is confuted in his reasonings, by the Apostle in the text. In the simple fact, which is there asserted, that "the world that then was perished by water;" the force of the plea expired, on which he

grounded his security ; that the course of human events would maintain the same even tenor, which according to human experience it had ever pursued. And so palpable was the fact on which his experience was founded, so easily might it be verified by the most incredulous, from a bare inspection of the structure of the earth ; that in their rejection of the consequences that followed on admitting it, the ignorance, which they might urge as their apology, left them, as it was wilful, really without excuse.

The object of the Apostle, in the interesting passage of the text, extending far beyond the confutation of the sceptic, gives us an insight into the future destiny of the earth. In insisting on the fact of one catastrophe, in which it had perished, he proposes it as the earnest of another, in which it was destined to sustain a fiery purgation. He assigns, as the cause of the crisis which awaited it, the accomplishment of a great moral purpose ; exacted alike by the justice, and suited to the offended majesty of the Divine Governor of the earth. And the matter of fact, on which he reasons being admitted,—“ that “ the world that then was perished :”—whatever be the direct causes to which it may be ascribed, or the future consequences of which it may be productive : the divine dispensations, as well in the visitation which has fallen on it,

as in the destiny which awaits it, may derive from the fact, however regarded or explained, support or illustration.

From the most extravagant of the systems, which have been devised to account for the internal structure of the earth; that development of its surface, by successive creations and destructions, which has disposed the stratum and the rock in its present position; this remark receives confirmation. In the progress of that advancement, from the lowest state of vegetable life, to the highest degree of intellectual organisation, which is assumed in this hypothesis, some earnest is given, that a higher state of existence is still in reserve, than that to which we have yet attained. That the principle on which the geologist professes to discover the early history of the revolutions of the earth, from the examination of its structure, may be tenable; it is necessary to its consistency, that it should be as strictly applicable to successive, as to antecedent ages. Until it can be proved, from the constitution of nature, that a necessary limit is prescribed to its development; its indefinite continuance is implied in the assumption that it is progressive. We are thus licensed by this principle to conclude, that this earth is destined to be the habitation of a race, distinguished as much by their superiority to man, as man is distinguished by his superiority to the brute

creation. Such being received as the established course of nature, the analogy is atonce discoverable, between the doctrine of the successive revolutions of our planet, as maintained by the geologist, and as revealed by the Apostle. So plainly is it intimated, that those who were no farther acquainted with the object of the inspired writer, and took, in illustration of his text, the light which is merely supplied by geology; might naturally suppose him to describe the changes through which it passed, preparatory to its final destination. "The world," he declares, "that then was, being overflowed with water, perished. But the heavens and the earth which are now, are reserved unto fire . . . against the day of judgment and perdition of ungodly men. . . . Nevertheless we, according to his promise, look for new heavens and a new earth, wherein dwelleth righteousness."

But while the testimony of nature, as thus interpreted by her disciples, brings this confirmation to the sublime truths of religion, which leaves them inexcusable, in their incredulity; by a difference, as wide as that which distinguishes the authority with which Revelation and Science address us, are the contrary systems really separated, which claim our assent. The one is not more consonant, than the other is repugnant, to every reasonable idea that we can form of the nature and destination of man,

and of the attributes and objects of the Creator. On the one side, the Almighty is represented as approaching his final purpose, by repeated trials, to the advancement of which no antecedent effort contributes, but in establishing a sentence of condemnation on that which precedes, as organically defective. The changes which mark this progression through different degrees of imperfection, are merely physical causes and effects, and if they have any object, derive it from some extrinsic state, which is contingent and future. On the other side, the work of the Creator is represented as perfected at once; and, as declared to be “very good,” receiving the divine benediction. For each change which the earth, thus formed and blessed by its Maker, was destined to undergo, an adequate reason is assigned, in the highest moral causes and inducements. On account of “the corruption and violence” with which it was once overspread, it was sentenced to perish in a flood of waters: in consequence of the farther abuse of God’s forbearance, and for the satisfaction of his justice, it is destined to suffer another and fiery purgation, that it may become the peaceful abode of the righteous. Nor are those contrary systems less signally distinguished by the practical lesson which they tend to inculcate; and which conduces no less to the culture of those virtues which adorn our pre-

sent state, than to the confirmation of those habits which fit us for a higher sphere of existence. In the revolutions, to which we are taught this world is subjected, the most striking example of the divine retribution is proposed to our hopes and fears, that can exert an influence over our conduct; the penalty reserved for the transgressor being as severe, as the recompense prepared for the righteous is glorious.

I. It must be superfluous to engage, at any length, in the proof of the fact, from which the inference of the Apostle is drawn, and in disputing the certainty of which, the sceptic stands convicted of wilful ignorance, or perverse opposition to the force of conviction. The task which remains to the defender of Revelation, against "the opposition of Science falsely so called," consists not in the difficulty of establishing the truth of one cataclysm, but of disproving the occurrence of several.

The evidence, in fact, cannot be resisted, which almost every region of the globe bears impressed on its surface, that in a great convulsion of nature the external layers of the earth were fractured, and afterwards deposited in a state of solution. That the revolution in which it suffered thus extensively, was not in the exact crisis of its creation, is not less manifest from the organic remains of a former world, which lie every where embedded in the soil

with which it is encrusted. On the nature of the element, by which this catastrophe was effected, it is not more difficult to pronounce with confidence : as those remains consist of aquatic productions ; as they are enclosed in solid masses into which they could not have entered had they not existed in a fluid state ; and as they are found to occupy a position, for which it is impossible to account unless on the supposition that they were precipitated in water. In difficulties not less inexplicable is the supposition involved, that a revolution thus vast and extensive could be effected by partial inundations, or by any natural agency inferior to that which was competent to produce a general deluge. The animal and vegetable remains, which attest the fact of this great catastrophe, are found in a situation, for which but one adequate cause can be apparently assigned. They are not to be explained, but on the supposition that a body of waters with resistless force overwhelmed the surface of the earth, swept over the tops of the highest mountains, and bore before it the productions of land and sea in general and indiscriminate ruin. The terrestrial objects consequently appear blended or interchanged with the marine ; the tenants of the lowest depths of the ocean are found deposited on the summit of the loftiest mountains : and those plants and animals, to whose growth and sustenance a

tropical sun is necessary, are found buried under the eternal snows of a polar climate.

In the deduction of the inferences to which these appearances directly conduct us, all mankind, with the exception perhaps of the select few noticed in the text, have generally conspired. Most of them aided by the declining light of tradition have implicitly acquiesced in the certainty of an universal deluge : admitting it on the testimony by which all matters of fact are established. In almost every part of the habitable globe, those who pretend to an early acquaintance with letters, have recorded the event in their pristine annals. While those, who lay immediately contiguous to the spot, where the remnant of mankind that escaped the wreck of nature first settled, preserved circumstantial accounts of the facts with which it was attended. To the same conclusion the most learned and experienced geologists have been conducted, by a review of the internal evidence of the globe itself; and have brought in confirmation of the external and common testimony, the patient deductions of science. They expressly and generally acknowledge, (to adopt the language of one of the highest celebrity, and most extensive experience,) that “ they distinguish three very striking phenomena, in the “ globe, the first dawn of organic life, the appearance of fragmentary rocks, and the ca-

“tastrophe that buried the monocotyledon vegetation.”

But while Revelation, between whose declarations and the deductions of Science, the analogy is thus strictly preserved, informs us but of one Deluge; theories have been constructed, in which the occurrence of many is proved on the one hand, and the existence of any is disproved on the other. The surface of the earth is so disposed in layers of rocks and fossils, according to the members of one school, that its constitution is only to be explained by supposing it has been destroyed and renovated in successive catclysms. The varying influence of fire and water upon the land, in the estimation of the members of the other, will adequately account for every peculiarity in its structure; its surface having been constantly exposed to the abrading action of the ocean; old continents having been depressed, and new heaved up by the elevating agency of subterranean forces. On taking a review of these theories, which contain little more than a republication of the old Neptunian and Plutonian hypotheses; if the former deserves the censure of being the more absurd, the latter merits the sentence of being the more mischievous. While the one aims at rendering the scripture account of the Creation unintelligible; the other labors at rendering the narrative of the Deluge positively false. Little however is

to be apprehended, on either hand, from their opposition to the cause of Revelation. Had not the insufficiency of their scientific pretensions been often unanswerably exposed; the evil qualities which they possess apart would become neutralised on being compounded. The bane which the one is calculated to diffuse, acts as an antidote to the poison dispersed in the other. In undertaking to prove a multiplicity of cataclysms from the structure of the earth, the one theory clearly establishes the reality of at least one Deluge; while in shewing the possibility of dispensing with all diluvian agency, the other as effectually refutes the assumption, that there were many.

It is, however, attended with no difficulty to give a true estimate of these rival hypotheses; one of which is no less curiously distinguished by its logical address, in magnifying the causes, than the other, in multiplying the effects which are warranted by the premises; and both of which claim equally the credit of standing opposed to the uniform experience of mankind, as far as it is possible to trace the evidence of history and tradition.

In the assumption, on which both hypotheses proceed, that entire continents have been submerged, and new recovered from the dominion of the ocean; a criterion is supplied, by which the utter inefficiency of either of them, to ac-

count for the present constitution of the earth, may be demonstrated. From the experience which we have of the agency of the earthquake and volcano, by which, in the ordinary course of nature, inconsiderable tracts have very rarely and partially suffered, we have superabundant proof of the inadequacy of the most powerful subterranean forces, which fall under our experience, to produce any effects equal in magnitude or extent to those by which the earth has been affected. Nor is the supposition of their efficacy in the least assisted by the admission of the conspiring agency of the sea; the slow and insignificant action of which, like its tides, is generally compensated; its retrocessions alternating with its encroachments, and thus, in process of time, deserting the land which has suffered by its advances. Such causes, instead of giving any proof of a revolution similar to that which the globe has sustained; furnish on the contrary, in the imperceptible changes, which they have been able to effect, evidence of its permanence, during the course of human experience.

From an examination of the superior strata of the earth, it is no less apparent on the other hand, that the tertiary and even the secondary formations, on which the notion of *several* Deluges is maintained, are local and limited. Whatever be the theory which is contrived to account for

these partial variations in the stratification of the globe; however adequate it may be found to explain every phenomenon in the basins of Paris, of London and the Isle of Wight: it cannot be doubted, that these formations no more give proof of any revolution sustained by the whole earth, than they afford evidence of its magnitude. It must be, on the contrary, palpable, that in the admission, that they are rare in occurrence and limited in extent, the supposition loses weight, that they have been produced by general deluges. In the same proportion precisely the presumption gains strength, that they have merely originated in partial inundations. Whether the soil was subject to particular variations in its surface, from the accident of its contiguity to an estuary, or to a lake situated in the vicinity of the sea; whether, while it there encountered the alternate influence of salt and fresh water, it was likewise exposed to the currents and drifting of the ocean, and was thus affected at a time, which preceded or followed the deluge, or possibly both; it is not at present necessary to inquire. Thus far I may be allowed to observe, that the physico-logician, who in accounting for formations, which may be thus satisfactorily explained, deems it rational to recur to the supposition, that the world has been successively destroyed and renewed; must be left, for any opposition upon

my part, to the unmolested enjoyment and exercise of his reasoning powers.

If we may, therefore, judge from the uniform, and immemorial experience of mankind, the supposition that entire continents have in the ordinary course of nature been swept away by the ocean, or submerged by the earthquake, and that others have been heaved up by the force of subterranean fires, is alike contradicted by the analogy of nature and science, and by the evidence of history and immemorial tradition. As it appears, notwithstanding, upon their concurrent testimony, and after the patient examination of the geologist, that continents, for however short a time, have formed the bed of the ocean; and that during the period of their submersion, it left, in the marine productions which it deposited, an evidence of its encroachment and its retreat; the conditions of the proposition admit but of the one explanation, which is offered to us on the authority of Him, whose power alone was competent to effect the total destruction of his works:—That “God brought a flood of waters upon the earth,” and that “the world that then was, being overflowed with water, perished.”

This short and satisfactory explanation, independant of the authority on which it is offered, has this strong presumption in its favor, that in standing equally removed from the extremes

into which opinion diverges on either side, it bears, impressed on it, one of the most distinctive characters of truth. In recounting the revolutions, which the earth was destined to undergo by fire and water, while it asserts the influence but of one deluge, it occupies the happy mean, between the opinion of those who claim for the agency of many cataclysms, and of those who deny the existence of any. And even beyond this, it has the merit of comprehending the small share of truth, to which those conflicting theories are indebted for their partial adoption ; as, in accounting for the great convulsion wherein the earth was submerged ; it admits the agency of the contrary elements, igneous as well as aqueous, to which the revolutions of our earth are ascribed on either side. In it, every condition is consequently answered, which is required in the test that has been proposed, for determining, amid rival hypotheses, which is to be received as the true.

II. In that great crisis of nature, as we are assured by the inspired writer in the text, the old world perished ; and the present world rose out of its ruin. And the sacred historian, who preserves the memorial of the catastrophe, describes the means employed in effecting this revolution, and its consequences, with a precision and comprehensiveness which is unusual in his descriptions. “The same day were all the foun-

“ tains of the great deep broken up, and the
“ flood-gates of heaven were opened. And the
“ rain was upon the earth forty days and forty
“ nights. . . . And the waters prevailed exceed-
“ ingly upon the earth, and all the high hills
“ that were under the whole heaven were co-
“ vered. . . . And every living substance was de-
“ stroyed which was upon the face of the ground,
“ both man and cattle, and the creeping things,
“ and the fowl of the heaven ; and they were
“ destroyed from the earth.”

As the investigation on which I have entered is conducted on the assumption, that physical causes coöperated, under the divine superintendence, in effecting this great catastrophe ; in seeking for such, as may adequately explain it, our attention is naturally directed to that agency, by which effects identical in kind, however disproportionate in magnitude, are produced in nature. In the united operation of fire and water, by the evolution of steam, a solution of the difficulty has been sought ; an expansive force proceeding from the union of these contrary elements, which no obstacle is capable of resisting. In our search after natural forces, competent to the production of the required effect, it is not necessary, however, to advance beyond the single cause, which is suggested in the latter element, by the inspired historian. As the agency of water, to which he exclusively ascribes the

extraordinary revolution experienced by the earth, is adequate to the production of every result, however violent and extensive, with which it is attended ; it is as unbecoming as unnecessary, to look beyond it for one more efficient.

By the laws of hydrostatic equilibrium, the pressure of a fluid, which is confined on every side, depends upon the extent of its surface, and the height to which the smallest column of it ascends in any direction, however tortuous or irregular. From the instillation of water through the smallest chink, provided the depth to which it descended was sufficiently great, and the surface of the fluid with which it communicated sufficiently expanded, a force might be generated adequate to overcome every obstacle. As a surface of but a few square yards, and a height of not many feet, would generate a force equivalent to the pressure of several thousand tons ; a power might be thus exerted by nature, to which the mass of superincumbent earth would oppose but a feeble resistance. Nor would the agency which might be thus brought into operation, though adequate to shake the mountain to its base, or rend it in fragments, be limited to the mechanic force which it exerted. By the descent of the fluid, into the fissures formed by the shattered masses, that violent chemical action might be produced, the effects of which would be no less extensive or ruinous. On com-

ing in contact with the pure metals, gas would be evolved, which from its elastic power, and from being condensed in the smallest space, would explode with an expansive force, sufficient, not merely to burst the strongest rocky barrier, but to project it in ponderous masses to the greatest distance. As the volcano owes to these causes its existence and operation, it would join its agency, in extending and increasing the convulsion in which nature labored. The clouds of vapor which would be disengaged by the internal and latent combustion, on ascending into the higher regions would be condensed into rain, and descending torrents would consequently swell the spreading inundation.

To give these principles, by which every condition of the problem may be solved, a practical application to the question which is before us; it is merely necessary to shew, (1.) That such agency as that to which the origin of the Deluge is here ascribed positively operates in nature, though on a reduced scale: (2.) That evidence exists in the earth itself, of effects corresponding to those which such agency would cause, and which if now produced to a commensurate extent would occasion a general deluge. In establishing both these positions, the principles, to the application of which they are necessary, will be fully verified, in the internal structure and geographical distribution of the

earth, as ascertained by the labors of the modern geologist.

(1.) In substantiation of the antecedent position, on the physical forces actually in operation in the earth, not differing in intenseness and power but extent of operation; a single extract will suffice from the works of the most learned and indefatigable of the professors of the science. Speaking of the New World, where similar causes operate on an extensive scale, and with express reference to the Andes; he describes the fluid mass which descended from its sides, “as not mixed with matter in fusion, “but suspended in water.” The passage I shall quote in the author’s words; as, on making allowance for the difference of magnitude in the objects described, a more apposite commentary than it furnishes on the text of the sacred historian, could not be easily fabricated.

“The *inundations*, that accompany the eruptions are owing to the *torrents of pluvial waters* poured from *the clouds*, that form during the eruption, by the disengaged vapor of water in the crater. The shocks of *violent earthquakes*, which are not always followed by flames, *open caverns filled with water*, and those waters bear with them broken and bruised *trachyte*, clay, pumice, and other incoherent substances.” In observing on a like eruption, which covered the surrounding plains,

for many leagues, with a clayey mud; he describes the small fish, that not only inhabited the streams of the neighbouring province, but that were generated in the subterranean waters, as enveloped in the liquid ejections.

The similarities which exist between this description and the narrative of the inspired historian are so palpable, that it appears nugatory formally to trace them. An inundation is represented as produced, on the one side, and a deluge, upon the other; but the sources from whence the waters are deduced, by which they were respectively occasioned, are identical. The analogy need scarcely be further pointed out, that subsists between the text and comment. “The *fountains* of the great deep that were broken up, and the *floodgates* of heaven that were opened, when the rain was on the earth forty days and forty nights,” finding a direct illustration, in “the *caverns of water* laid open by the earthquake, and the *pluvial torrents*, disengaged by volcanic action.”

(2.) In proceeding, in corroboration of the second position necessary to the establishment of this hypothesis, to inquire into the effects exhibited by the earth, of such physical agency as is essential to the conditions implied in it;—they must be sought in the *formations*, under which term the series of rocks, that compose the outward incrustation of the earth, are gene-

rally distributed in classes. Of the external layers thus technically denominated, four are numbered by geologists. The lowest of the series, which from their inferior position, and their want of organic remains and arenaceous masses, are generally termed *primitive*, may be however excepted from the present discussion, as referable to a period antecedent to the deluge. The basin formations, which occupy the highest place, and which principally if not exclusively include the classes termed *tertiary*, may be equally dismissed from the consideration of the subject: as they are of too rare an occurrence, and too limited an extent, to form the ground of any general conclusion, they can afford no evidence of a catastrophe by which the entire earth was affected. In the *transition* and the *secondary*, which remain, and of which the former are generally superimposed on the primary, those effects of physical agency must be consequently sought, wherein the causes may be verified, to which the deluge has been hypothetically attributed.

In the process with which, according to what has been hitherto conjectured, the deluge commenced and proceeded; it has been assumed, that the external soil of the earth was fractured by the pressure of the waters from beneath, which, on forcing it upward, diffused themselves in a state of violent agitation over its surface,

where it encountered various disturbing forces ; that having at length exhausted their force, and gradually recovered their equilibrium, they deposited the matter which they held in solution, as they returned into the bed of the ocean, or subsided into the cavities, which they had opened at the time of the eruption. With the different stages of this progression, the nature and position of the transition and secondary rocks, which, from their contexture, are descriptively termed *fragmentary* and *sedimentary*, wonderfully accords. The antecedent formations consist for the most part of the ruins of the primary series, on which they generally rest, and to which they bear the closest analogy in their texture : and in consistency with the mode of their production, they alternate with brecciated and arenaceous rocks, and contain some organic remains. The subsequent formations, consisting of sandstone, limestone and coal, exhibit, in their texture, that evidence of a sedimentary origin from which they have acquired their name : while the vegetable and animal, the terrestrial and aquatic fossils, which are entombed in them, prove them to have been originally fluid, and deposited in a state of solution, not of fusion ; those remains, in their pristine form, being incapable of resisting the effects of fire. With the formations of this class must be coupled the alluvial deposits ; which are composed either of sand and gravel,

and thus equally manifest an aquatic original ; or of boulder stones, which, as frequently deposited in immense masses at a great distance from their native beds, prove the violence of the force by which they have been rent and projected from their pristine situation. Under the general appearances, in which the effects of similar agency may be traced, we may finally include the varieties of elevation and depression, in the surface ; and of inclination, direction and position, in the stratification of the earth. These common features of every land and clime, admit of an explanation equally plain and satisfactory, from the same principle ; as originating from the upward pressure, the excavating force and violent abrading motion of the water when set free ; and from the inward subsidence of the earth, under the disturbing influence of its action.

Among the forces that imparted an impulse thus violent, to the element which produced these effects ; that, arising from chemical agency, is principally included, which chiefly manifested itself in the fury of volcanic eruption. Of the extent of its operation, every formation bears witness ; masses, evincing an igneous origin, being interposed between them in veins and beds, as well as diffused upon their surface. Of the impetuosity communicated to the currents of diluvian waters, by its impulse, evidence is dis-

covered, in the form and direction of valleys and seas, and of the opposite shores of continents and oceans. The correspondence which their opposed sides or coasts are often observed to maintain; not merely as running parallel in their windings or angles, but, where the contiguity of the situation admits, as possessing a similarity of stratification; sufficiently discloses the causes which disposed them to assume their present form, and the resistlessness of the force, by which they have been excavated.

The endless variation of the agency which was thus set in operation, and of the disturbing forces by which it was liable to be opposed and deranged, renders the attempt almost hopeless, to trace by the geographical distribution of the earth into land and sea, the direction in which the diluvian tides and currents were impelled by the explosion. A chain of volcanic craters exists nigh the equatorial regions, in nearly the same latitude, though in diametrically opposite quarters of the globe, the extent of which cannot be traced, as they are lost in the inexorable depths of the ocean. The pealing artillery, which here opened its fires, if simultaneously discharged, would involve the earth in a catastrophe, not inferior in its calamitous effects, though comparatively limited in its extent, to that which overwhelmed the earth at the deluge. From these tremendous batteries,

the thunders of which seem to have sought a vent when "the great deep was broken up," about the site of the Eastern and Western Indian Archipelagos; it is rendered not improbable by the form of the neighbouring isles and continents, that the irresistible explosion burst forth, which roused the impetuous fury of the ocean. When lashed by the storms, and swollen by the descending cataracts that accompany such eruptions, it would receive that impulse, which would drive its accumulating and constantly reflux waves back on themselves, and spread their mountainous undulations to the site of new craters, and the centre of new forces. On the first opposition encountered by the body of waters, thus furiously impelled, it would heap upon the opposing barrier, the matter torn up in its course or driven violently before it, "as the waters prevailed, and the mountains were covered." A barrier of this kind accordingly appears, in the mountainous chain which extends, from China to Portugal, in the old world; and in the correspondent part of the new, from the West Indian Isles to the Gulph of Mexico. And in the distance to which the rushing waters urged their career, their impetuosity would abate in proportion to its remoteness; as its agitation subsided, it would leave less prominent marks of its course impressed upon the earth's surface. In corroboration of this last

condition of the hypothesis, the northern parts of both worlds are observed to extend in enormous tracts of low land, covered with sands, marshes and other alluvial deposits.

But, of the direction in which the diluvian waters were impelled, and the height to which they were swollen, perhaps the strongest proof exists in the organic remains, which they have left behind them, in evidence of their advances. That it proceeded from south to north, and swept over the alpine heights, plainly appears, from the direction it must have taken, in transporting the animal and vegetable productions of tropical climes to the arctic regions, and depositing them at the summit of the loftiest mountains. By the sentence of malediction denounced against the earth, “every living substance “was destroyed which was upon the face of the “ground, both man and cattle, and creeping “things, and the fowl of the heaven.” While numbers of the submerged carcasses were buried in the convulsion; numbers were floated on the waters, and deposited with the matter which they held in solution, or gradually precipitated. As the animals of prey, which are provided by the economy of nature for the consumption of putrescent matter, were involved in the general destruction, the multitudes of drifted bodies suffered no diminution from their rapacity. Numbers might have thus reached their present site;

and if deposited nearly in a state of decomposition, it was probably, not unfavorable to their preservation in the masses in which they are now found embedded. The larger quantity which is discovered of the remains of those animals that possessed no means of flight or escape, compared with that of those who might betake themselves to some place of refuge or security, even further attests the nature of the catastrophe in which they were indiscriminately overwhelmed. While the relics of marine animals and land quadrupeds are consequently found to abound; those of birds are rare, and those of man still rarer. While any possibility of escape from danger remained; it is obvious, the nearest elevations would be naturally sought by the feathered and the human race; as those situations would be the last reached by the rising waters, and least affected by their commotion. As they were thus left to perish in the rising flood, and to moulder above the earth, upon its departure; the chances of their preservation, with other antediluvian remains, must have been proportionably diminished.

On thus applying the simple principle, suggested by the sacred narrative, in explanation of the text of the books of Revelation and of nature; no difficulty presents itself, for which Science does not supply an analogy, by which it may be cleared up or justified. The single

shock of an earthquake, along the equatorial regions, by opening fissures for the subsidence of the water, would be sufficient to originate, in aqueous pressure, those subterranean forces, and that chemical action, which, however incompetent to the upheaving or depression of continents, would be sufficient to occasion their submersion in a general deluge. On admitting the influence of such agency, in diversifying the surface of the globe with hill and vale ; it would appear, that the earth, as more compact in texture, before its fragmentary formations existed, was more calculated to suffer by explosion, on the subsiding of the waters into its cavities. In its primitive state, it probably abounded more in the pure metals, which in the fracture and stratification of the soil, entered into new chemical combinations. The vegetation, with which it was at that time spread, appears also, from its fossil remains, to have been of a size and luxuriance, far exceeding that with which it is at present covered. By the submersion of the leaves of these plants, under the influence of solar light, oxygen would be disengaged ; and by the contact of those metallic masses with water, hydrogen would be evolved ; and both of these would be copiously eliminated, by the operation of such intense heat, as attends volcanic eruptions, on the crude metals and their bases. These gases, of which water is composed,

when exploded, by the electric fluid, that on such occasions is intensely active, would take an aqueous form, and would contribute with the waters accumulated in the bed of the ocean, and ejected from the depths of the earth, to swell the general inundation. As the objection which has arisen in the difficulty of providing a sufficient quantity of water for the submersion of the earth, admits of this easy reply ; that of disposing of it, after it had accomplished its purpose, may be as satisfactorily answered. On the cessation of the deluge, it would return into the bed of the ocean, or subside into the cavities of the earth, from which it had been originally liberated, or which it had contributed to excavate, in rending it into its fragmentary formations. Of the superfluous portion, which the occasion might engender, and which might be absorbed by attraction into the heated atmosphere ; part would be condensed into the masses of clouds which have since obscured the post-diluvian skies ; and part be deposited in the mountain snows, which have afforded a perpetual supply to the springs opened in the earth : and which have descended from the summits, or flowed in the channels, formed in the convulsive throes that occasioned the deluge.

Of the extent to which preternatural causes may have conspired with natural, in the production of this crisis of nature, it may be deemed

worse than vain or fruitless to inquire. The originating cause of the access and the decrease of the waters, is ascribed, on the authority of inspiration, to the divine interposition, in the most emphatical language. “ And, behold, I, *even I*, “ do bring a flood of waters upon the earth, to “ destroy all flesh, wherein is the breath of life, “ from under heaven.” “ And God remembered “ Noah, and every living thing, and all the cattle “ that was with him in the ark : and God made “ a wind to pass over the earth, and the waters “ asswaged.”

In many of the sublime strains of the sacred poetry, when the power of the Omnipotent is celebrated, in imagery adopted from this great catastrophe, he is consequently introduced as presiding at it in person. The terrors in which the scene, rendered awful by his presence, is involved, are adopted from the most stupendous objects in nature ; as agitated and convulsed, in this last expiring struggle which preceded her dissolution. As the thunders roll on high, and the lightnings flame along the ground ; as the sea is moved, and the earth trembles, at the approaching Divinity ; the Almighty Spirit descends. Invisible, he walks upon the whirlwind : and directs his steps along the surface of the waves. No form is seen, where he passes ; for impenetrable clouds and darkness veil, from the eye, the terrific majesty of his presence.

An uplifted arm alone appears in the heavens, grasping the lightning bolt ; while, amid the dreadful pauses of the thunder, a voice is heard, that utters the appalling doom, “ From under heaven, every thing that hath the breath of life shall die.” As the sentence of malediction smites the devoted earth, the elemental conflict is renewed ; peal follows peal, and flash succeeds to flash ; while the fiery torrent descending from above mingles with the flaming cataract that issues from below. While angels awe-struck and amazed look on : those ministering spirits who once hailed with acclamation the new-formed earth, now marking every piteous change that hastens its dissolution,—the shattered frame, the depopulated desert, the desolate watery waste,—weep over the wreck of all that once was nature.

III. In the execution of justice, God was, however, not unmindful of mercy. A small remnant of the race, whose “ corruption and violence” had drawn upon them so dreadful a retribution, was accordingly saved from the catastrophe, in which the rest of mankind was overwhelmed. For them, he restored the earth to its pristine state ; and reinstated them in the privileges which had been forfeited by transgression. Having repeatedly entered into covenant with their descendants, who as repeatedly violated its conditions ; he again opened a chan-

nel for reconciliation, with a promise not merely of oblivion of their past offences, but of assistance to their infirmities, in securing his future favor. To add to this gracious declaration of pardon and amnesty, all the authority that could be imparted by the character and mission of the legate who conveyed it; he committed it to his only begotten Son, to be delivered without exception or reserve to a world involved in apostacy and rebellion. But the experiment was attended with consequences more hopelessly criminal. This Divine Being, so august and holy, of manners so gentle and beneficent, that he was formed to be the object alike of universal love and veneration, they unrelentingly seized: bound him, like the most execrated malefactor, and in a moment, when mercy was extended to a murderer, put him to the most ignominious and excruciating death. It is unnecessary to extend, with the hideous detail of what followed, this appalling account; in which a merciless cruelty aggravated the most desperate impiety. It is grievous to witness how this race, though spared and recalled by the Almighty, continue to reject his pardon, despise his promises, violate his covenant, “quench his Spirit,” and “trample “underfoot” his beloved Son. Still that they may not again perish, in unconscious ignorance of the result; he has left a warning of the retribution, with which an apostacy, thus obdurately

and inexcusably prolonged, will be finally visited. He has accordingly declared through his Apostle, in the words of the text, that “the heavens and the earth, which are now, are kept “in store, reserved unto fire, against the day “of judgment and perdition of ungodly men.”

But to the philosophic eye, the prospects of Science present a less gloomy picture, than those here opened to our faith, by Revelation. From the first transient glance, to the most enlarged and comprehensive view of the frame of the universe, it seems to bear every character of an eternal stability. Not only in the general order and harmony of the system, but in that wonderful method of compensation, by which, on the attainment of prescribed limits and periods, every temporary disturbance finds a balance, in some countervailing perturbation;—the mechanism, by which it is moved, displays that accurate adjustment, which precludes the chance of any deviation from a mean rate of movement, by which its permanence may be endangered. This system, however, harmonious and permanent, as it appears, is observed to experience changes, which its general order and stability would render inexplicable; if we did not suppose, that it was rather under the direction of a presiding Intelligence, than committed to the guidance of a blind mechanical principle. If any authority be due to the deductions of Sci-

ence, in deciding on the nature and destination of the highest objects in the universe ; it is not to be denied, that the light not only of planets but of suns has been extinguished, by the same almighty hand, which first kindled their glories.

We need not dwell upon the occasional disappearance of fixed stars from the heavens ; in the extinction of which all the planets must have perished, that attended them as the suns, from which they derived, with light and heat, their sustenance and vitality. Even within the limits of that system, in which our earth is included, and with the constitution of which modern science has made us more intimately acquainted ; evidence appears, that the planetary bodies, if not liable to decay, are obnoxious to destruction. From a law, deduced from the relative distances of those bodies, it was concluded, that one of them had been withdrawn from the place, which the conditions of the principle required it to occupy. The fragments of one were accordingly discovered in four asteroids circulating in our system ; the irregularities in the orbits and motions of which are only to be explained, by the supposition that some internal force had shattered a great planet, at that common point of their intersecting orbits, from which they appear to have been projected.

As far as the rule of analogy extends, in the

support or confirmation of fact; so far it appears, the experience of Science corroborates the doctrine of Scripture. From the certainty, that one world has ceased to exist, the possibility must be necessarily inferred, that another may be cut off in a similar catastrophe. But the effects of decay, to which it appears the heavenly bodies are obnoxious, may be even farther instanced, in illustration of the declarations of the Apostle. In the great Conflagration, in which he declares the avenging justice of God will close the career of the wicked; he not only includes the earth, but our entire planetary system. As it was formerly my object to shew, that those bodies, which pursue together their course through the heavens, had a common commencement; it would seem not unreasonable to conclude, that they may have a common termination. But the fact seems to be established by the concurrent authority of the inspired Legislator, and the holy Apostle, by whom each crisis of nature has been recorded. In recounting its origin from water, as I formerly observed, and its destruction by fire, as I proceed to notice, they respectively include “the heavens and the earth” in their description. Under the former term, as I formerly had occasion to explain, the whole planetary system, which has the sun in its centre, is generally intended. That the Apostle’s language is not to

be understood in a lower sense, nor his meaning included within narrower limits, will be directly apparent; when it is compared with the sublime passage of the prophet, to which he obviously alludes in his description. “But the day of the Lord will come, in the which *the heavens* shall pass away with a great noise, and the elements shall melt with fervent heat, *the earth also* and the works that are therein shall be burned up.” In a description, excelling not less in strength of coloring than splendor of imagery, the prophet had previously foretold in similar terms, “And all *the host of heaven* shall be dissolved, and *the heavens* shall be rolled together as a scroll; and *all their host* shall fall down, as the leaf falleth from the vine, and as a falling from the fig-tree.” Our Lord, in alluding to this sublime passage, the last image of which he disposes in the form of a parable, is still more circumstantial in his selection of the objects of nature; he includes the two great luminaries, with the stars, in his description of this dreadful crisis, in which “the powers of the heavens shall be shaken:” and declares his acquiescence in the truth of the prophet’s revelation, in the strong asseveration which he subjoins on the certainty of this consummation: “*Heaven and earth* shall pass away, but my words shall not pass away.”

The proximate cause of the final dissolution

of nature, preparatory to its improved renovation, the Apostle suggests, in declaring, in the words of the text, “The elements shall melt with *fervent heat*.” And were it his object to deliver himself in the measured diction of Science, it is not easy to conceive how his language could have been improved in technical precision.

Of “heat” I formerly had occasion to speak, as the great agent in nature, by which all matter may be reduced to its “elements;” and the elements themselves reduced to their primitive atoms. As solids may be reduced by it to liquids, and from liquids be dispersed in vapor; when the *water* which covers our planet, was thus dissipated, the *earth* itself might be reduced to a fluid mass. The most “fervent,” or intense “heat,” of which we have any knowledge, is that produced by the ignition of the two gases, which are the “elements” of water, in the proportion precisely in which they are combined in that liquid. The combustion is produced by a copious and continued current of electricity; by which, acting in a different degree of intenseness, the fluid may be reduced to its components. Thus might water itself, the quantity of which has been supposed, in a less advanced state of chemical science, to oppose an insuperable physical objection to the conflagration of the earth, form the most powerful instrument in its combustion.

As the electricity, by which those effects might be produced, and which is an agent perhaps the most extensive in its operations through nature, appears to have been peculiarly energetic at the creation of the earth ; it may be not less instrumental, in its destruction and renovation. In the different degrees of tension of which this subtle fluid is susceptible, the forces excited by it, act in different and contrary directions, and thus contribute to destroy or balance each other : all that comes under our immediate observation, is a small residue of this combined action, imparted to currents circulating round the earth, in directions parallel to the equator. Were it then the good pleasure of the Omnipotent, who is unrestricted in the choice of his means, and who imparted to this agency its energy and direction, to suspend or increase one of these antagonist forces, or command both to operate in the same direction ; were it even his divine will, while he preserved to this agent its present balance in nature, merely to suspend or destroy the equilibrium, by which water is maintained in solution, and its reflux preserved to the ocean : that combustion might arise, by which the bodies of the planetary system would be involved in a common destruction. Thus might our sun and its glorious attendants present, in the gradual extinction of their light, a spectacle as dreadfully grand, as the destruction of a crea-

tion, but two centuries since, exhibited to our planet, when the light of one of the fixed stars was observed to expire.

While Science thus far supplies a ray to lighten the course of our inquiry; in one respect, it tends to involve us in more hopeless obscurity. Suns, we are assured on its authority, have been extinguished, planets rent into fragments, and the earth itself subjected to successive destructions. We are, it is true, taught by it, to form more just and elevated notions of the order and permanence, displayed in the mechanism of the universe. What causes then, may we ask, can occasion so wide and violent a deviation from the general law by which it is governed? The constitution of the system, we acknowledge, when internally considered, demonstrates that the most wise and provident provision was made for its permanence. How then is the extinction of any constituent part to be reconciled with the design of the contrivance, or the wisdom of the contriver? He who has power to create must surely have power to preserve; and the causes which induced the creation of a world must have necessarily decided against its destruction. How then, upon any hypothesis that Science can devise, is the contradiction to be reconciled; and the contrary facts, that a planet has existed, and has

been destroyed, rendered consistent with each other, or with the attributes of the Creator?

But the obscurity in which Science, notwithstanding the boasted clearness and certainty of its light, leaves this subject involved, at once disappears before the divine illumination of Revelation. Far above material and physical causes, it teaches us to look up to moral and intellectual inducements. Recognising the immutable relation between the gracious Creator and the intelligent creature; it regards in the one the righteous Governor of the world, and in the other the moral accountable agent. Thus viewing the maintenance of this relation, as the very end for which the creature and creation exist; beholding in its violation the total frustration of the end of their existence; it sees the wisdom and justice of God, if not engaged, yet justified in decreeing their common extinction. On turning for the solution of the difficulty, to the highest authority; such is the plain unembellished statement of that Divine Volume, which is founded on facts rather than arguments; which enforces no precept by the labor of proof; recommends no principle but by the plain declaration of its moral inducements and consequences. By it we are informed, that under one violated covenant, “God saw that *the wickedness* of man was great in the earth,” and

under another, “that the earth is kept in store,
“ reserved unto fire, for *the perdition of ungodly*
“ *men.*”

“ Seeing that all these things shall be dissolved, what manner of persons ought ye to
“ be in all holy conversation and godliness,
“ looking for and hasting unto the coming of
“ the day of God, wherein the heavens being
“ on fire shall be dissolved, and the elements
“ shall melt with fervent heat? . . . Wherefore,
“ beloved, seeing that ye look for such things,
“ be diligent that ye may be found of him in
“ peace, without spot and blameless.”

LECTURE VII.

GEN. VIII. 15, 16, 17.

And God spake unto Noah, saying, Go forth of the ark, thou, and thy wife, and thy sons, and thy sons' wives with thee. Bring forth with thee every living thing that is with thee, of all flesh, both of fowl, and of cattle, and of every creeping thing that creepeth upon the earth ; that they may breed abundantly in the earth, and be fruitful, and multiply upon the earth.

IN the evidence of a creation and deluge, which the earth bears indelibly impressed upon its surface, it brings unanswerable proof, of the power of its Maker and Judge ; his goodness and his severity having been fully displayed in its first formation, and in its subsequent destruction. But it is not less necessary to his supremacy, as the Moral Governor of the Universe, that he should be equally acknowledged in the character of its Preserver. And of his prerogative, in this respect, he has left, in the book of Nature, a confirmation of the volume of Revelation, as irresistible as that which it internally retains of its origin and its catastrophe. As the fossil remains of a former world give proof of that destruction by water, in which all

organic beings were involved : the living productions with which it is now supplied, and particularly the animated, who possessed no natural means of escape from that destructive element, furnish in their existence, a lasting evidence of a miraculous preservation, that rescued them from its fury. Nor is the force of this proof to be evaded, but by recurrence to a supposition, in which the immediate intervention of God is even more fully acknowledged, than in the truth which would be eluded by those who may dispute it. For, as long as a man or animal subsists upon the earth, they who deny that he is a standing evidence of the *preserving* power of God, must have recourse to the *creative* power, to account for his present existence.

To the truth of the event which is recorded in the text, the fullest confirmation is thus borne by a bare inspection of the face of nature. Those who dispute the force of this inference, and have recourse to the notion of different creations, must at least admit, that it disposes of some share of the difficulty, in which they find their task involved, who undertake to reconcile the present appearance of the earth with the evidence which it retains of a previous destruction. The pretext which is sought, for a process so arbitrary, is not, however, to be drawn from the inadequacy of the solution which Revelation supplies, and which may be deduced

from the simple fact recorded in the text, by regular and necessary consequence. The notion of its expediency is besides founded on a misconception of many circumstances, in the different state of the globe, previously and subsequently to that great catastrophe, in which it may be readily conceived, the constitution of nature was essentially altered. On the authority of Scripture, it appears, that great changes were not only effected in the structure of the earth, but in the temperature of the atmosphere; by which correspondent changes would be produced in the organic and inorganic world. To form any just estimate, how far its present state admits of explanation from the deliverance to which the text alludes, the alterations must be taken into account, which were likely to arise from those causes.

From the brief account of that most beautiful appearance in nature, the rainbow, which the Almighty was pleased to make the sign of the Covenant into which he entered with the earth, in the character of its Preserver, the conclusion derives increasing evidence, that the phenomenon of rain was unknown previously to the deluge. In recording the terms of the compact of which it was appointed to be "the token," the sacred historian connects it with the phenomenon of clouds, in such a manner as to shed light upon the great change which the atmosphere

sustained in that catastrophe. “ And God said, “ This is the token of the covenant which I make “ between me and you and every living creature that is with you, for perpetual generations: I do set my bow *in the cloud*, and it “ shall be for a token of a covenant between me “ and the earth. And it shall come to pass, “ when *I bring a cloud over the earth*, that the “ bow shall be seen *in the cloud*.”

It has been, I think, very satisfactorily proved, that the dedication of this phenomenon to such a purpose is incompatible with the notion of its previous appearance. And though the connexion between a symbol and the thing signified may be arbitrary, and depend on an accidental association; it seems requisite to the choice of “ a sign,” that it should have a significance founded in nature. In the sacraments, which are not merely federal rites, but the seals of a covenant, the principle is strictly observed; the visible sign in them deriving its appositeness from its natural significance.

A physical propriety is not less apparent in the choice of the phenomenon, which God was pleased to make the sign of the covenant, into which he entered with the creatures preserved from the deluge. As the only knowledge which they possessed of rain was probably derived from its effects as experienced at that crisis; on beholding it again fall upon the earth, they

would be naturally led to apprehend a repetition of the calamitous consequences with which it was at first attended. But when regarded in connexion with that glorious phenomenon, which manifests the influence of the sun upon the atmosphere, it was calculated to inspire a better hope ; for as long as that influence prevails, a pluvial deluge is physically impossible in the present constitution of nature.

It has been already observed of rain, that it proceeds from the condensation of the atmospheric vapor ; which is held in combination with the air in proportion to the heat derived to it indirectly from the solar influence. In the deluge, the whole of the aqueous matter thus sustained by the atmosphere was discharged in rain ; as necessary to create a flood of sufficient depth to cover the mountains. In consequence of the total submersion of the earth, the radiation of heat was suspended, and the reduction of the vapor to water was consequently promoted. It remains to be observed of the rainbow, that it consists in a decomposition of solar light, by the refractive and reflective power of the rain. In it the influence of the sun upon the atmosphere is not merely manifested, but in the very drops of the descending showers ; from which alone an inundation, similar to that in which the earth had perished, might be apprehended.

As the phenomenon of the rainbow thus manifests the influence and operation of that cause, by which continued rain is precluded ; it seems of all natural appearances the fittest to constitute a sign of the covenant, which stipulated, that there “ shall not be any more a flood to “ destroy the earth.” Those who were not qualified to investigate the physical causes of the phenomenon, might discover, in the obvious effects which attended it, a significancy, which justifies its appointment. As in the sunny and transient showers, with which the rainbow is attended, it is regarded as the precursor of favorable weather ; it could not fail to be acknowledged, even by those who regarded it in so low a view, as an expressive “ token” of the covenanted preservation from the destruction by rain in a second deluge.

I. When we descend from the subject of the heavenly phenomena, to the consideration of the inhabitants of the earth ; a clue to the intricacies of their natural history, and the difficulties with which it is encumbered, presents itself in the short passage of scripture, which has been selected for the text. Whatever doubts may suggest themselves to the objector, from the present state of zoological science ; the impression which it was the object of the inspired writer to communicate cannot long admit of a contest. The extent ascribed by him to the

deluge, and to the destruction which it effected, will justify but the one inference ; that he considered the whole of the living beings, which occupied the earth in his own times, of which alone he can be supposed to speak, were the descendants of the small remnant, whose preservation he has recorded. “ And the waters prevailed exceedingly over the face of the whole earth ; and all the high hills, that were under the whole heaven were covered. . . . And every living substance was destroyed which was upon the face of the ground, both man, and cattle, and the creeping things, and the fowl of the heaven and Noah only remained alive and they that were with him in the ark.”

1. By the actual discoveries of the naturalist, or the artificial divisions of his science, the species of animals are multiplied to such a degree, that a difficulty has arisen in conceiving how a vessel of the capacity ascribed to the ark could have contained them. Of the class mammalia alone, of which the quadrupeds form but a part, between eight and nine hundred species, as he assures us, have fallen under his observation. While of other ascertained species, the birds are computed at five times, and the insects at seven hundred times, that number. As the male and female of each species were admitted into the ark, the numbers in this computation must be

farther doubled, in order to form any estimate of the multitudes for which it was necessary to provide accommodation.

In meeting this palmary objection, the urgers of which appear to have exhibited nearly the same proportion of wit as wisdom, no time need be wasted in ascertaining the actual dimensions of the ark ; to which the most elaborate computations, however, ascribe a sufficient capacity, in estimating its contents at 2730781,9008 feet, English square measure. Those who find a difficulty in conceiving how the vessel could have been accommodated to the animals, may possibly have minds of sufficient capacity to take in the converse supposition, and to conceive, how the animals might have been accommodated to the vessel. There is a time in the life of the largest, at which it occupies but little space ; and independent of the difficulty arising from the want of room, two considerations were sufficient to determine Noah to admit into the ark only the young of the larger and more ferocious species. No apprehension could be indulged from their violence, and no difficulty experienced in providing them sustenance. At an early period of life, the most dangerous animals are not only harmless but playful ; and for their support, the milk of the ruminant animals would have abundantly sufficed. For they were taken by sevens, of which six might have been

females ; and we know that they were severally unaccompanied by their young ones.

In the circumstances attending the delivery of the living multitudes from the place of their confinement, two particulars merit remark ; not merely as confirming the truth of the sacred account, but as illustrating its philosophic consistency.

As Mount Ararat is described as the resting place of the ark ; one of the highest mountains of Western Asia is represented as selected for the place of their egress : whatever might be the diversity of soil, climate, or food, required by the different species, care was thus providentially taken for its immediate and adequate provision. To the observation of the naturalist we are indebted for the information, that as the mountain at different altitudes has a different temperature, it possesses the advantages of different climates. The natives of countries possessed of the most dissimilar temperature, are thus found associated on the same mountain ; a region being chosen for their habitation at an elevation, which ensured a climate congenial to their nature and habits.

As the region of Western Asia, in which this mountain rises, is among the most elevated of the earth, it was first freed from the effects of the deluge : the passage from it is direct to that high table land, the desert of Gobi or Shamo,

the elevation of which has pointed it out to the naturalist as the probable abode of the primitive races. Facilities were thence afforded for the early dispersion of the animals released from the ark, and their gradual distribution through the distant continents. In the extensive and productive countries, into which the region of Asia declines on every side, and of which the western is among the most highly favored, vast rivers disperse themselves in all directions. Immense mountains enclose or intersect these tracts, and confer on them the advantages of every climate; their summits being covered with perpetual snows, and their valleys enjoying a perennial summer. In these regions the whole of the species of animals which have been domesticated by man are found wild; not only the horse, cow, sheep, and goat, but the dog and cat, here rove in a state of nature. They abound alike in the corn, pulse, fruits and vegetables, that supply food for man; and with the plants and cereal gramina which furnish animals with the means of subsistence. From the same central situation, the species to which the primitive families gave birth, and the more ferocious tribes of which they were the prey, might have passed to the distant regions, which they have since continued to inhabit.

2. These observations are sufficient for the removal of every difficulty in the natural his-

tory of the Pentateuch, when estimated with reference to the state of Science, in the age of Moses; by which I would be understood to mean the positive, as opposed to the observed, state of the animal kingdom, as distributed over the earth at the early period when he flourished. Those who look for a scientific classification, in the sacred writings, seem as much to mistake the nature of arrangement as the object of scripture. The distribution of animals, by the Hebrew legislator, into "clean and unclean," is founded not only upon physical, but civil and religious distinctions. Into the latter it would be foreign from my present purpose to inquire: as far as the former entered into his object, the principle on which he founds his distribution, preserves so close an analogy to that which is adopted in modern science; that the scepticism must be invincible, which discovers in the resemblance a merely accidental coincidence.

Of the illustrations derived by the naturalist from Comparative Anatomy, in support of his science, not the least important or interesting are those which demonstrate the harmony, with which the different parts of organised beings are accommodated to each other, or to a common end and object. So nicely are the members and the digestive organs adapted to each other, for the performance of the respective functions in the animal economy; that, from observing

the structure of the one the conformation of the other may be very certainly determined. Thus in the birds and beasts of the raptorial order, the claws are not merely adapted, in such a manner, to the beak or to the teeth, but to the stomach ; that, from the view of one characteristic organ, the others might be discovered, and the class of the animal ascertained. In regarding this principle, in its practical application to natural history ; a striking illustration of its justness occurs in the ruminant and gallinaceous animals, which are distinguished for their usefulness to man ; and which, as necessary to his subsistence, are endued with unusual fecundity, and are easily naturalised to any clime, where he fixes his abode. In these different classes, which naturalists are accustomed to assimilate, in tracing the affinity between the winged and four-footed races, the principle receives the most striking exemplification. The analogy which is observed to exist in their organic structure, as might be naturally expected, extends also to their food. In the comparative light in which they are regarded, the resemblance is accordingly traced between the feet and the stomach, employed in procuring and in digesting it ; and which, though differing accidentally, are essentially similar in the mode of their adaptation to the attainment of this common purpose.

The knowledge of these distinctions, on the

novelty of which modern science rests no small share of its claims to originality, cannot be altogether denied to the sacred historian. They are not merely implied in his distribution of beasts and birds into "clean and unclean;" but on them, these two classes of the Levitical Law are expressly founded. Under the former denomination, he has not only included the ruminant beasts and gallinaceous birds, to which the Hebrews were exclusively confined in the choice of food, but he has distinguished them, on the principle, which the comparative anatomist acknowledges, as not merely legitimate but fundamental. In marking them out, he merely particularises the hoof and the stomach, which distinguishes them as ruminant, and determines their class in the scale of organised beings. "Whatsoever *parteth the hoof*," he declares, "and *cheweth the cud* among the beasts, that shall ye eat." But in specifying the species which were proscribed, he observes, "Whatsoever *goeth upon his paws*, among all manner of beasts that go on all four, these are unclean to you." Here the mere specification of the paw distinguishes the nature of the animal; from which its anatomical structure may be conjectured, and its relation to the raptorial class be determined.

The same observation extends to the fish and insects, for the determination of which, as "clean

“ or unclean,” a rule is delivered, conformable to the same principle of distinguishing the species by a particular organ. “ These shall ye eat of “ all that are in the waters : whatsoever hath *fins* “ *and scales* in the waters, in the seas, and in the “ rivers, them shall ye eat.” And again, “ These “ may ye eat of every flying creeping thing that “ goeth upon all four, which have *legs above* their “ feet, to leap withal upon the earth.” It is of itself sufficiently evident, that in the species which this rule comprises, those creatures are included which mankind have generally agreed in preferring as food. It may be, besides, reasonably conjectured, that the scaly tribes are given the protection of armour, as exposed to injury from rocks and shells in searching for particular sustenance ; and that reptiles are furnished with limbs, constructed for leaping, that, when similarly engaged, they may not encounter the danger of aërial foes, in their endeavour to escape from terrestrial. But what physical properties, arising from a correspondent organisation, might have recommended these creatures as preferable food, I am not prepared to state ; as I remain unacquainted, whether they may have hitherto eluded the inquiries of the modern zoölogist.

When the object of Moses is kept in view, the objections urged against his skill as a naturalist will need no refutation. His zoölogy like his

astronomy, as not intended for the philosophical inquirer, but for the common observer, was necessarily adapted to the usual appearance of things, and expressed in ordinary language. It would be therefore not merely unjust but irrational to exact from him an attention to the distinctions of modern science, which are arbitrary and artificial. When its speculations, as founded in nature, are really entitled to the name, they will not be found at variance with his representations. It has been indeed objected to him, that in his enumeration of “birds” the bat is included: but the objection is founded on a palpable misrepresentation. He places it after the creatures which he designates by a general term signifying “fliers;” and he introduces it between them, and “the reptiles that creep on all four.” In the natural arrangement which he follows, merely as necessary to the intelligible distribution of his subject, it is difficult to conceive, where he could have more judiciously placed an animal, that forms—atleast to the ordinary observer, to whom he addressed himself—a connecting link between the tenants of the air and the earth.

II. Although the sacred narrative is thus easily reconciled with the state of zoölogy in the times of Moses; a difficulty arises, on comparing the Geographical Distribution of animals, at the present day, with the account of their origin

and preservation, delivered in Scripture. Of the methods which have been devised to dispose of this difficulty, while some would require an express revelation to entitle them to credit ; unfortunately none appear to be reconcilable with its explicit declarations. To the intricacies of the subject, it seems, indeed, to offer but the one clue, which is represented in the text ; in which the declaration of the Almighty to Noah is recorded ; “ Bring forth with thee every living
“ thing that is with thee of all flesh, both fowl,
“ and of all cattle, and of every creeping thing,
“ that creepeth upon the earth ; that *they may*
“ *breed abundantly upon the earth, and be fruitful*
“ *and multiply in the earth.*”

However inadequate the explanation afforded by these words may be found, in removing the whole difficulty of the subject, it will not be denied, that for some part of it, at least, it offers an adequate solution. As the earth bears internal evidence of such a catastrophe as must have involved the entire animal race in a common destruction ; some approximation is made to its removal, by a statement, that, while it involves no contradiction, accounts for the existence of such atleast as are now found dispersed over the continents, connected with the place, where they immediately debarked with Noah. And we may the rather acquiesce in this conclusion, as the present state of the animals, thus geogra-

phically distributed, corresponds with the circumstances of the sacred narrative. In the region, which it informs us was first occupied after the deluge, as I have already observed, those which have been domesticated by man are now found in a wild state: and from it, the fierce and savage kinds, which were fitted only to become his prey in the chase, were easily driven to those climes, of which they are now observed to be natives.

With respect to the numerous species that are found distributed over the new continents, with which modern discovery has made us acquainted; the manner in which they may have reached those regions is involved in considerable perplexity. In choosing between the difficulties which the question thus arising presents; the preference, it admits not of dispute, is due to the solution furnished by Scripture. In accounting for the geographical distribution of those animals, as we are reduced to the alternative of believing, that they have been there *created*, or have been thither *transported*; we cannot long hesitate in making an election. If a recurrence to preternatural intervention be necessary for the establishment of either hypothesis; there is not much room for debating as to the conclusion which is least opposed to natural belief, as offering least violence to our ordinary experience. For no time can be required

for serious deliberation, when the decision turns on the question, whether the Almighty, to supply those continents with their four-footed inhabitants, recommenced the work of creation; or provided, in the ordinary course of his providence, that they should be supplied from the stock with which the earth was already replenished.

That the latter supposition alone can be maintained upon scriptural grounds, may be established without any labor of proof. The assumption, that the Almighty has made different regions the scenes of successive creations, as they required to be supplied with new species of animals, derives no support from its authority. It appears wholly inconsistent with his intervention, for the preservation of those which he saved from the deluge; and with the declaration of their fecundity, in replenishing the earth. Nor is it to be easily reconciled with the exercise of his special providence, which was unquestionably competent to provide, from their offspring, a supply for every region of the globe, without an exertion of his creative power. For the establishment of both the conditions in this supposition, a positive provision is made in the record of their preservation. The closing words of the text, as the declaration of Omnipotence, is equivalent to a pledge of their fertility; “Bring forth with thee every living thing that

“ they may breed abundantly in the earth, and
“ be fruitful and multiply in the earth.” And
in the covenant, into which he entered with
them, when they proceeded from the ark, a
promise of his special providence is implied.
“ And I, behold, I establish my covenant with
“ you . . . and with every living thing that is with
“ you, of the fowl, of the cattle, and of every
“ beast of the earth with you . . . neither shall
“ all flesh be cut off any more with the waters
“ of a flood.”

Certain difficulties, however, arise from the arbitrary distinctions of the naturalist, which induce him to acquiesce in the former supposition as the least exposed to exceptions. From his intimate acquaintance with the mysteries of nature, during the incalculable ages for which animals have existed, and through the immeasurable regions in which they are dispersed, he assures us, in his infallibility, that they can have undergone no essential and permanent variations since their creation. The different species, he would persuade us, have ever been what they now are; and by their organisation and functions, they are necessarily confined to the particular tracts which they at present occupy.

1. The issue of the question thus mooted, it must be obvious, turns exclusively upon the certainty of the principle by which the species are

confined to an unvarying form. It is not to be disputed, that animals of the wildest nature are occasionally dispossessed of their natural domains, by the sport or tyranny of man. When thus driven from their native regions, if the species are liable to undergo a variation, similar to the changes which occur daily under our observation in the domesticated tribes; if when thus dispersed, they may, like these tribes, be naturalized to particular sites, and may acquire new functions as their organs are developed by exercise and use; the assumed adaptation of the *organisation* to the *haunt* not only vanishes, but the fundamental position, in both its principles, proves it to be radically unsound.

The condition of undeviating permanency in the species being thus necessary to the validity of the inference; we are necessarily led to inquire, how the assumption of it is proved? And so much atleast may be admitted in its behalf; that it has just as much authority, and nothing more, than belongs to the logical figure, termed *petitio principii*. Thus far even the naturalist has the sagacity to see, and the candor to acknowledge. In the perplexity which has hitherto embarrassed the search after a difference which may pass for distinctive, the incapacity of animals specifically different to breed with each other, or to perpetuate their characters beyond certain generations, was at one time as

confidently proposed, as it is now hopelessly abandoned. Nature herself, although her votarists propitiate their goddess with the loftiest niche in their temple of science, refuses her sanction to the illusion.

As a last and desperate resort, we are referred, for the satisfaction of our difficulties, and the discovery of the specific distinction, to the experience of certain indefinable varieties that have not arisen in the animal kingdom, as far as our knowledge or conjectures extend. A limit—which, as arbitrarily assumed, differs in nothing essential from the principle, that is discarded for its sophistical assumption of the point to be proved—is thus assigned to nature; and if it have not fallen under our experience to see it transgressed, we are required to conclude, that it neither has been, nor ever will be passed. The argument thus offered, for the limitation of species, it must be confessed makes no very high pretensions to cogency; as it employs no method of proof, more forcible or convincing, than analogy and probability. Of the possibility of its practical application it is difficult even to form a conception; as the habits of the wilder animals, from an experience of which it could be alone determined, are unfortunately only known to themselves. And the information derived from the menagerie as unluckily contributes nothing to its decision; if no proba-

ble inference can be drawn from the tamer animals which we domesticate, none whatever can be deduced from the wilder which we imprison. It requires, however, little experience in science, and less skill in reasoning, to demonstrate, that the specific difference thus proposed for limiting the boundless fertility of nature, is not merely unsound in theory, but in principle nugatory and absurd. It appeals to experience, where there has been no opportunity, and there is scarcely the possibility, of observation; and from a few affirmative facts, which are wholly beside the point at issue, it deduces a negative conclusion.

By the observation of the domesticated tribes, to which our experience is properly confined, the direct contradiction of the assumption is positively established. Within the proscribed limits it is acknowledged, that varieties occasionally spring up, exhibiting a diversity of form from the parent stock; and that by segregation and pairing, the difference may be rendered specific and permanent. Within certain degrees of affinity, different species are known to breed; and where the same conditions are observed, their offspring are found to propagate the variety to successive generations. And that this process is not inconsistent with the constitution of nature, sufficiently appears, from the uniformity of the law, by which the vegetable

and animal kingdoms are governed. While varieties are thus observed to arise spontaneously, in the same species ; which it cannot be denied is subject to degenerate, and which if liable to degenerate, is subject to improve ; it must be nugatory to object to the facts thus established, that, after a few generations, the peculiarities of the parent again break out in the progeny. The exception can never weaken the general principle, until it can be shewn, that the proper means for perpetuating the variety, by food, soil, climate and pairing, have been resorted to, and the experiment has not succeeded.

But the line, which is so arbitrarily established between the wild and domesticated animals, is not entitled to a moment's consideration, above that by which it is proposed to separate the species existing in a natural state. The futility of the distinction may be theoretically and practically proved. For, in the first place, the term *domestication* is devoid of a meaning, if it is not resolvable into circumstances of food, soil, climate and pairing. As these are accidents which may be brought within the reach of the wilder animals, by the mere change of their haunts ; particularly where they are found to migrate, from a barren to a more productive soil, which affords them sufficient inducements to wander or settle : the assumed difference between them and the domesticated animals ne-

cessarily disappears. In the next place, some of the permanent varieties, bearing every character of specific differences, by which the descendants of the same species are distinguished, have positively arisen in a state of nature. A very slight experience of the changes sustained by the animals of the old world, since their transportation to the new, places this observation, by which the point in dispute is practically decided, beyond controversion.

The difference, which is conceived to exist between the wild and domesticated animals, thus appears to be destitute of all foundation in nature and reason. The distinction, in the pretensions which it makes to truth or reality, is confined to this simple fact,—that the influencing causes, from which varieties originate and become permanent in the animal races, do not so generally arise in the savage as in the domestic state; and that ceasing in the same proportion to operate, the effect is necessarily limited or precluded. From the comparatively scanty resources which nature provides for the subsistence of animals; and the incapacity with which she has formed them to supply the deficiency from artificial resources; they are rendered dependant upon the accidental means furnished by the places where they first see the light. When the opportunity of pairing with individuals of their own species occurs;

to which they are instinctively prompted by nature: no inducement to ally themselves to the individuals of analogous species can possibly exist. But by the influence exerted by the migration and civilization of man upon the animal tribes, the order thus wisely established, and violated only from necessity, undergoes a new modification, adapted to the prerogative of the monarch, in whom the sovereignty of the animal kingdoms, with the dominion of the earth, is vested. The tenant of the desert and forest, when driven by the hunter from his accustomed haunts, if secluded from the intercourse of his own species, stimulated by a passion more urgent than the appetite which impels him in search of food, is forced into new alliances. Should the soil, climate and sustenance to which he now becomes inured, be congenial to the hybrid progeny which is the fruit of the union; the variety which arises is as easily perpetuated, and a new species as naturally propagated, in the savage as the domesticated state. But should the nutriment and temperature of the clime to which they are naturalised be unpropitious to their growth or fecundity; the species altogether fails, or becomes gradually degenerate and extinct.

Nor can the inference which is here deduced from nature and experience be regarded as merely conjectural. It cannot be deemed of

trivial importance to its establishment, that its feasibility, as far atleast as the domesticated species are concerned, is fully admitted in the prohibition of the Levitical code: "Thou shalt not let thy cattle gender with a diverse kind." Its positive realisation, in the case of the wild species, has the sanction of the highest scientific authority. A naturalist whose profound theoretical views were only surpassed by his extensive practical experience, has deduced from such foreign mixtures of the wilder orders, several of the domesticated tribes, which are now distinguished as different species.

2. The possibility being premised, that the primitive tribes of animals preserved from the deluge, might be transported from central Asia; the geographical distribution of the existing species creates no objection to the inspired account of their origin. To those with whom Revelation does not pass for a fable, it must be manifest, that the divine word was engaged for their dispersion over the earth. And although it appears not less conformable to reason than scripture, that, in disengaging the question from any intricacy, recourse should be rather had to an act of special providence, than to the greatest conceivable miracle, for such a creation must be necessarily deemed; we need merely refer to the ordinary providence of the Omnipotent to extricate the subject from every embarrassment.

The entire race of mankind, it is now happily admitted, even by the most sceptical naturalists, are descended from one family, if not from a single pair : it follows, of course, that in proceeding to their present location on the earth, they must have originally set out from the same region. It is, however, not difficult to shew, that whatever course they pursued under the providential care of the Almighty, the tribes of animals by which they are now surrounded might have been their attendants.

The necessity by which man is made to change his abode, for the supply of his daily wants, operates variously in dispersing the animals which are his useful drudges, or his natural foes. In the nomadic state, the domesticated race accompany him in search of better replenished streams, and more fertile pastures : in pursuit of those tribes, which constitute their prey, the more wild and rapacious are allured to follow the course of the wanderers. Even from among the most ferocious, the hunter selects the object, or companion of the chase. Having driven the dam from her den, or pursued the sire to the waste ; he seizes upon the young and unprotected offspring, and trains it to capture or destroy the game, which supplies him with food and occupation. Nor is the tenant of the most wild and inhospitable tract exposed, in these attacks, to the hostility of a single

invader. By the immemorial custom of the East, the population of entire districts joins in the invasion of his native domain. When each hunter has armed himself for the chase, and led forth the animal which he has trained to the field, a vast extent of country is surrounded. By their united shouts and clanging arms, its wild inhabitants are driven, in common, into an enclosure ; here they are easily dispatched, or are compelled to seek, by flight to regions more remote and inaccessible, security from their pursuers. Nor is the mode of warfare, thus waged upon the untamable natives of the plains, more prevalent on the Asiatic, than the American continent: to which, without doubt, it has passed across the perpetually frozen sea, with those Eastern tribes, to whom the new world owes its population.

As animals may be transported, if taken sufficiently young, wherever man migrates ; it can be little wonderful, wherever he fixes his abode, to find him accompanied by those which are domesticated, or employed in war and hunting. It can therefore excite as little surprise, that the remains of the elephant, which was trained to both purposes, should be found in any tract that has been visited by the Monguls, as that they should be discovered in any country that was invaded by the Romans or Carthaginians. As the more cultivated of the Eastern Asiatic na-

tions have maintained an intercourse with the neighbouring islands, and have fitted out expeditions for their reduction; it is not impossible, that a vessel freighted with one or more animals of that kind, or with any kind that might be serviceable to the navigators in seeking a new settlement, might be driven by stress of weather to the northern shores of the Asiatic, or even to the western coasts of the American, continent. Wherever an animal, so unwieldy as the elephant, so difficult to provide with subsistence, and so hard to inure to a polar clime, could be transported; it cannot be reasonably doubted, that any other individual of the animal tribes might have been as easily conveyed. The remains, however, of the Siberian elephant, preserved, by the banks of the Lena, under accumulated snows, places beyond a doubt, that one atleast of that race made his way to such a clime, and reached or sustained it, during the utmost rigors of winter. The inferences deducible from this single fact are invincible, in refuting the confident assumption, that animals have always been limited by their organisation, functions and habits, to the countries of which they at present are natives. For if this fact fails to establish, that the tropical inhabitant may be naturalised to the arctic climate; it must atleast succeed in proving, that he may reach it by migration or transportation. Be-

yond the admission of this point, we require no further concession, to account for the location of any animal in the spot, wherein it may be placed, at the present day, by any method of geographical distribution.

We far underrate the resources and ingenuity of barbarous nations, in devising expedients for the transportation and management of the animals necessary for their subsistence. As their whole time and exertions are occupied, by this engrossing object; and the supply of their wants depends chiefly on their success in hunting and fishing; in these arts, they are, by many degrees, more expert than civilized nations. In preserving and multiplying their stock of game, necessity has instructed them in many expedients, with which we are wholly unacquainted, from the various artificial resources which supply us with sustenance. It is thus curious to observe, that in the luxury of naturalising salt-water fish to their native lakes, the savage tribes of the South Sea islands have long preceded the most polished nations of Europe. It is impossible therefore to resist the conviction, that the provident provision which nature has made for the dispersion of animals over the earth, should be carried into effect by the intervention of man, for whose use they were principally intended; and that in the distribution of the tribes, with which any country was stocked, it chiefly

depended on the accidental circumstances, under which it was first occupied and retained by the original settlers.

That in this representation of the geographical distribution of animals, the coloring is not false, nor the outline distorted; a comparative view of the characters of the species, with their relative position on the earth, may convince the most sceptical observer. On turning to western or central Asia, for the first stage of their migration in proceeding to the remotest quarters of the globe; the proportion of the stock possessed by any region appears commensurate with the facilities of communication with the parent country. Had various spots been chosen, as some naturalists would persuade us, for the centres of different creations; though the forms of the animals might be varied, in different regions, suitably to the accidents of soil and climate; it is difficult to conceive a reason, why, the circumstances being in other respects the same, they should disproportionably vary in their size and numbers. We however observe a remarkable decrease, in both respects, as we depart from that place of appulse, from which, we have infallible authority for believing, the dispersion commenced and proceeded in different directions. The native race of animals on the African and Asiatic continents, between which the communication was direct, exhibit no

difference in their magnitude or numbers, nor in any physical characters, which may not be resolved into the diversity of situation. But in the tribes of America the deficiency is striking, in both respects; and in those of Australia, it is still more extraordinary: the numbers are here not only reduced, but the size diminished; no animal of any magnitude being found on the continent. As the species in those vast regions differ remarkably from each other; where they exhibit a casual resemblance, we are enabled to track the course which the emigrants pursued by their likeness. Thus an identity in the animals, occupying the arctic climes of Asia and America, proves that the stream proceeded in the direction where the continents are nearly united. In other respects the route cannot be traced; as the mode of communication varied with the precarious or providential circumstances, to which the continent occupied was originally indebted for its population. The birds which are distributed more widely and equally were, indeed, unrestricted in their choice of a passage; and as their course was thus unaffected by any casual or precarious circumstance, they exhibit, in their distribution, a geographical *affinity*, by which the direction that they followed may be determined, and traced from the original point of dispersion. Such are results which, it is almost superfluous to observe, ac-

cord exclusively with the supposition, that the various tribes of animals distributed over the earth are the descendants of the stock, which was at one time collected in a limited tract of western Asia.

From those who may still regard with incredulity the conclusion, to which we are thus conducted alike by reason and experience; and from the force of which they can find no means of escape, but in betaking themselves to the notion of a series of miracles of the highest order; we may reasonably demand an explanation of the instinctive causes, which guide the migratory animals, that annually change their abode, in search of a temporary sojourn. Or, if zoölogical science, notwithstanding the plenitude of its light, still consigns us to pristine darkness on this point; it is atleast competent to reconcile the simple fact, that a migration atall takes place, with the improbability, that central points were chosen for different creations, and the various races accommodated, by their organic structure, to particular districts. Whatever be the mysterious obscurity in which Science, from its peculiar views, may regard these points as hopelessly involved; when viewed by the light which Revelation affords, they appear so clear as to require no elucidation. To the solution which it gives of the question, how the various animal tribes have been dispersed over the

earth, the supposition that they were endowed with the facility to migrate is not merely reconcilable, but essential. It assumes the fact, as unquestioned, that they were instinctively guided, or providentially directed, in changing their place of abode ; until that distribution precisely was carried into effect which is scientifically termed *geographical*.

III. Having so far proceeded in this discussion, it may be thence easily collected, whether the Scripture account of the origin and dispersion of animals over the globe, be more exposed to the objection of zoölogical impossibility, with which it has been charged ; or the crude and abortive essays, which under that denomination so confidently pretend to the character of Science. A judgment may be thence readily formed, whether the impotence of the objection, with which Revelation has been assailed, be not even surpassed by its malevolence. The question, however, admits of being tried by another criterion ; arising from a kindred science, with which Scripture is, not less falsely and injuriously, declared to be at variance. In the application of this test, difficulties arise, which the schemes of the Natural Theologian and Historian prove equally incompetent to solve ; but which directly disappear, on applying to the simple account of the Sacred Historian. As it has the force of a “ crucial instance,” in determining the

relative claims of these systems, which are too often brought into an invidious and unworthy competition, it merits a brief consideration ; more particularly as tending incidentally to remove some trite objections, arising from the number of original species preserved from the flood, and the diversity of those which are distributed over the great continents of the world.

In tracing the marks of wisdom and design with which the structure of organised beings is adapted to their functions ; some unlucky exceptions occasionally arise, for which the professors alike of Natural Theology and History find it difficult to account, on the principles of their respective systems. In the regular gradation with which animated beings descend in the scale of nature, according to the relative imperfection of their organisation ; exceptions from the general law of their adaptation present themselves to the comparative anatomist, which he pronounces as little conducive to ornament as utility ; anomalies, for which the physiologist finds no use, beyond the opportunity it affords him to vent a sarcasm or sneer, against the physico-theologians. These unfinished efforts of nature are termed, from their imperfect structure, *anatomical rudiments* ; by which term, organs are designated in that imperfect state, which disqualifies them for discharging the functions they would perform, if more fully developed. The

pelvic bones in the male marsupial animals, the olfactory nerves in the porpoise and other cetacea, the optic nerves in the mole, the structure of the eye in the mollusca, are among the most familiar instances cited to prove, that nature is not always solicitous about adapting the means to the end, but often projects a member, without intending it any employment.

In accounting for this capricious deviation from the general laws observed in her works, the physiologist refers it to “a mechanical principle:” in illustration of which, he informs us, that a certain model, or original type, adapted to an intended function, has been selected, according to which nearly allied beings were to be formed. But unluckily, this impotent attempt at explanation, as abortive as the rudiment for which it pretends to account, while it aims at gathering certain anomalies under a more general rule, succeeds in presenting us with one, which is infinitely more objectionable, from the numberless exceptions to which it is liable. However the physiological lecturer, to whom we are indebted for so much information, may yet have to learn, it is no secret to the physiological reader, that this supposed adaptation of certain types of organs to particular functions, is a principle not merely transgressed, but constantly reversed, in the economy of nature. We have authority of the highest rank in his science,

for knowing, that the various functions necessary for the preservation of life, or the continuation of the species,—such as deglutition, digestion, circulation, generation,—are performed, by every class and order of animals, with organs, not only different from those of man, but those of each other. And indeed, without the benefit of scientific experience, from the mere exercise of common sense, we might arrive *à priori* at the same conclusion. For the Omnipotent Author of nature not being restricted, in the production of any purposed end, by the employment of particular means; he may, as he deems wise, accomplish a multiplicity of objects by the same means, or the same object by a multiplicity of means, and the wisdom and design, with which they are accommodated to each other, be in all cases equally conspicuous. And such is the interminable variety which characterises his works, that it creates an invincible objection to the principle which is proposed for the removal of our difficulties, as well as to the science on which it is founded. It not only shews, in a stronger light, the nonsense of “the mechanical principle,” proposed by the physiologist to account for organic rudiments; but, according to the admission of the most candid and best informed in the science, shakes to its base the entire fabric of Comparative Anatomy.

It is impossible to conceive any just notion

of the Deity, from which the attribute of infinite perfection is excluded: it is as impossible to conceive any just conception of his works, from which the idea of consummate wisdom and design, in adapting the means to the end, is for a moment rejected. It is inconsistent with any worthy notion that may be formed of the attributes of such a Being, to suppose him restricted in his choice to any particular means; and stupidly irrational to conceive him limited to such as are physical and anatomical. From his being and nature, and the capacity bestowed on us, to know that he exists, and is good; we might certainly infer, that in the ends which he had in view, in enduing us with powers and privileges so exalted, he comprehended those also which are moral and religious. When our ignorance is so far enlightened, that some rational conception may be thus attained of the end; it will be attended with little difficulty to prove, that the accommodation is, in the present instance, distinguished by the same marks of wisdom and design, which characterise all the works of their adorable Author.

The great moral purpose projected in the Creation, as Revelation expressly admits, was the calling into existence a rational and accountable race, who were to praise and reverence its Author, “for the works which he had made and “created.” To this paramount object, as we

learn from the same unerring authority, the whole work was rendered subservient ; the sovereignty over the animal and vegetable kingdoms having been vested, after the creation of the world, and its recovery from the Deluge, in the beings whom God had formed “ in his “ own image.” With the charter by which this authority was conveyed at the latter period, we are at present exclusively concerned ; “ And God blessed Noah and his sons, and “ said unto them, *Be fruitful, and multiply, and “ replenish the earth.* And the fear of you and “ the dread of you shall be upon every beast “ of the earth, and upon every fowl of the “ air, upon all that moveth upon the earth, and “ upon all the fishes of the sea ; *into your hand “ they are delivered.*” As the Divine Author and Preserver of this race condescended to be acknowledged as their Father, not less than their Creator ; in conformity with this gracious purpose, he ordained, that they should stand to each other in the relation of brethren ; and consequently determined that they should be the descendants of a single pair. To carry these beneficent purposes into effect ; it was necessary that the different orders of creatures should proceed from the same spot “ to multiply and re- “ plenish the earth.” As the human race was bound by this necessity, in descending from a single pair ; in vain had the other creatures been

“ delivered into their hand,” had they been suffered to “ increase” in a greater proportion. Had different races of them been created, and allowed to multiply from different places ; mankind, instead of maintaining a supremacy upon the earth, must have fallen, with the weak and defenceless animals, a prey to the more powerful and rapacious.

If we may therefore follow the views of Scripture, it appears to be a necessary, though a remote, consequence of the production of mankind from a single pair, that in proportion as they continued to spread, the animal tribes should proceed to disperse, from a single spot, in different directions. But the earth, over which they continued to diffuse themselves, by its constitution possessed different soils and climates ; it was therefore contrived, with no less wisdom and design, that the animals, which were “ to multiply and replenish it,” should be so constituted as to accommodate themselves to the diversity, and when naturalised to it, to make it the place of their permanent habitation. For to man the grant of universal dominion had been exclusively conveyed : to the enjoyment of which, the capacity to inhabit every clime was a necessary condition. But the immense variety of subordinate animals rendered it expedient, that they should be provisionally adapted to particular regions, in which they were destined finally to

settle; had not this provision been wisely and providentially made, while some regions were overstocked, others would have been left destitute of living creatures.

On thus comprehending in our estimate the twofold consideration implied in the command given to Noah in the text; that the animal species were once confined to a particular spot, and yet destined to disperse themselves gradually over the earth; we obtain an insight into the end proposed, for which, in the divine wisdom, adequate means were to be provided. “Go forth *of the ark*, thou and thy wife, and thy sons and thy sons’ wives with thee. And bring forth with thee *every living thing* that is with thee of all flesh that they may breed abundantly in the earth, and be fruitful *and multiply in the earth.*” In the effects which a change of soil and climate tends to produce, particularly in the domesticated animals, we not only discover the means devised for this beneficent purpose; but perceive the wisdom and design with which they were accommodated to the end. In the organic development which takes place under our observation, in the animals and the plants thus designated, and in which the notion of “organic rudiments” is implied; we may ascertain the process by which many existing species acquired the particular forms and constitutions, that have adapted them

to the climes, of which they are the present natives. We observe the process of nature depend almost uniformly upon a change of place ; which involves a correspondent change in climate, soil, and sustenance, necessary to its advancement. We see it illustrated not merely in the same department of her reign, but extending alike to the animal and vegetable kingdom ; in which all organic beings are produced from germs, which require the influence of temperature, for their expansion and maturity, and which when expanded degenerate and decline on being directly transplanted into a soil and clime that is uncongenial. We behold it exemplified, not merely in different species, but in the individuals of the same species, at different periods : in the course of their progress from birth to maturity, they increase, by the growth of each organ, from a rudimental state, to the full development of its functions. While this process, as manifested in the multiplication of the animal tribes, depends upon a change of place ; we equally observe the adaptation of the organ to the function in every change and state of animal existence. As a different degree of development would prove not merely useless, inconvenient and oppressive to the same individual, under different circumstances, but at different periods, of its existence ; by a wise and provident adaptation of the means to the end, they are accommo-

dated to his peculiar wants and situation. Where there are no objects of sense, the use of senses is denied, in compliance with the same principle : as an organ could then furnish no means of gratification, and might, from its sensibility, become an instrument of pain, as liable to be externally affected. In such a constitution of things, so little would the wisdom and design of the contriver be displayed, that every notion which we can form of a just adaptation would be violated and offended.

The almost boundless extent, to which this process tends to diversify the objects of nature, has been however assigned its limits. In the varieties to which the union of allied species gives rise, we discern organs in that state of imperfect development, which renders them, in no essential respect, different from “rudiments.” And in this imperfection, a provision is wisely made, against the extension of the variety beyond a certain degree ; the organic defect of the hybrid offspring disqualifying it for the propagation of others in its likeness. Where such rudiments remain in entire species, we are not to conclude, that they are not designed to answer some wise and necessary end. For we cannot determine, that they are not intended to be developed, either in the species itself, by the spontaneous efforts of nature, or by some change of temperature and situation ; or, in the varieties

to which it may give birth, by an intermixture with allied species, in which the same organ is more fully developed. While the Author of nature thus guarded against a confusion, he provided for a plenitude in nature; and the most acute and learned naturalists, in their distribution of animals in circular groups, acknowledge the truth of this doctrine in theory, and have established it by demonstration. They assert a distinction in “the order of nature,” and “the order of formation,” explaining the latter by reference to “process in time.” In this system of “Progressive Development,” as they term it, they admit that chasms exist; some links of the chain having been broken by the extinction of species; some remaining undetected by observation or inquiry; and some remaining to be supplied, by the appointed operation of nature.

On the principles recognised in this system, as fundamental, every anomaly discoverable in the species of the new continents, and in the genera of the antediluvian world, admits of an easy explanation. As many of the original types, from which the existing species of the Asiatic, American and Australian continents are descended, may have fulfilled the object of their creation, in producing the present varieties that constitute the plenitude of nature; they have since gradually disappeared by the agency of man, or the process of nature. The families

that have succeeded these in the scale of nature, may have possessed a close affinity to the parent stock, though they now preserve analogies only to each other. If species, so widely dispersed and so generally useful, as the camel, the ox, the sheep, the goat, and the dog, can be no longer traced to their original; how much more liable were the primitive race of those tribes, that were less necessary and multiplied, to survive any constitution of nature or casualty of civilization, which might determine their extinction!

From the law which might have thus limited the natural existence of the antediluvian genera, they seem to have been less constituted to deviate. It is not improbable, that many were formed for the sole purpose of preventing the too rapid increase of animal and vegetable life; before mankind, to whose existence its inordinate growth might have proved fatal, became sufficiently numerous and skilful to restrain its progress. Having accomplished that end, they may have perished, by the instrumentality of man, or become extinct with the means of subsistence. This process of extermination might have commenced before the deluge; and genera might have thus disappeared, unless when preserved in those fossil remains, which like the horns of the elk, occasionally attest their previous existence.

Nor is it improbable, that many marine monsters,—the existence of which is proved by monuments of the same kind,—are still tenants of the lowest depths of the sea; from which they had been probably never cast up, had not the earth experienced a convulsion of sufficient magnitude to occasion its destruction. As all nature abounds in organised beings, and the subterranean waters are found to have their species of fish; the rule of analogy justifies the inference, that the lowest abyss of the ocean may not be destitute of inhabitants. In the wonderful economy of nature, in which an equal provision is made for the consumption of putrescent, as for the production of living matter; we may infer, on the same authority, that monsters formed for consuming the remains of larger fish and amphibious creatures, have their place assigned in the great scale of nature. After the various theories, in the construction of which the fossil remains of marine monsters have exercised the fancy of geologists; this hypothesis seems entitled to respect on the grounds of reason and analogy. It at least requires little deliberation to choose between it, and the extravagant conjecture of those who suppose, that the earth was originally formed for the use and habitation of those monsters, the structure of whose organs proves them to have been merely formed for destruction.

It would far exceed my limits to enter into a particular detail of the difficulties, with which the sacred historian had to contend, in laying a foundation for the inferences which have been deduced from his descriptions ; and for the accuracy of whose views a reason can be only found in the assumption of his inspiration. On limiting our attention to the mere consideration of the difficulties which opposed the selection of a spot on the globe, from whence the origin of the race of animals from single pairs, and their geographical distribution over the surface of the earth, might be explained ; a juster idea may be formed of the fitness and wisdom of his choice, when it is compared with the positive inferences to which the modern inquirer has but arrived after the most prolonged and patient investigation. Those who consider the prejudices natural to an education acquired among the Egyptians, and the antiquity claimed by that people for their own country, which they supposed the cradle of mankind, cannot err in ascertaining the authority which directed him in his preference for Armenia, if they are sincere and unprejudiced.

LECTURE VIII.

GEN. x. 32.

These are the families of the sons of Noah, after their generations, in their nations : and by these were the nations divided in the earth after the flood.

IN the relative view in which Revelation has been hitherto regarded ; the works of the Divine Artificer have been principally considered with reference not only to his creative, but his destructive and preservative power. The special care, which he extends over the beings to whose dominion the realm of nature was submitted, and whose happiness and advantage were principally consulted in his dispensations, opens a field of inquiry not less important and interesting. When the single family noticed in the text, who were the objects of his special protection, are compared with the existing population of the earth, in the countless multitudes which compose it, and the immeasurable tracts over which they are distributed, we have irresistible evidence of his providence and power. For the assumption on which this inference depends, the text alone supplies adequate authority. But the particular object to which I am

pledged requires me to shew, that the disclosures of Revelation are consonant to the decisions of Science; as in the eviction of this analogy, the last of the difficulties disappears which I have undertaken to remove, the subject may be commended to attention.

From various circumstances in the description of the inspired historian, viewed in comparison with the present form of the earth, it would appear, that the region near which the ark floated was in a great measure exempt from the violent effects of the convulsion with which the earth had been shaken to its centre. If we could conceive that the occupants of that vessel were calculated to sustain the agitation of a boisterous sea; it was of a construction that disqualified it for withstanding the fury of the elements. From the account of the course of the Euphrates and Tigris in the description of Paradise, it appears, that those rivers had not deserted their ancient beds, although they had in some respects deviated from their original channels. And the trivial though interesting circumstance related of the branch, which the dove bore into the ark on the decrease of the waters, is so far of importance, as it enables us to conclude, that the soil of the contiguous lands had not so far suffered that the vegetation was materially injured. That region, it has been observed by travellers, is not only remarkable for produc-

ing the olive, which first brought intimation of the recovery of the earth from the waters of the deluge ; but for the luxuriant growth of the cypress of which it is generally supposed the ark was constructed. Had not the divine care interposed to protect the soil from the ravages of the ocean, the animals which had been saved from its fury, on their departure from the ark, must have perished from famine.

By these circumstances the peculiar region would be identified, from which the small remnant of mankind proceeded, that was destined to supply the earth with its future population ; were it not determined by the contiguity of Mount Ararat and the plain of Shinar to the sources of those great rivers which form the natural boundaries of Mesopotamia. And the tract thus marked out, as the cradle of the human race, is distinguished by two characters, on which our advancement in geography enables us to pronounce, and which stamp the impress of truth on the sacred narrative, in selecting it as the spot to which the ark was providentially guided. From the elevation of its site, which appears from the descent of the great rivers that proceed from it in different directions, it was more speedily recovered from the waters of the flood, that deposited themselves in the seas by which it is surrounded. In addition to these advantages, it occupied with reference to

the three great continents, through which the descendants of Noah were destined to disperse themselves, a more central situation than any tract of equal elevation in Asia ; it was thus best adapted to become the source of that population, by which those countries were overspread, the early civilization of which amply attests their remote antiquity.

But the accuracy of the sacred historian in referring to this spot, as the earliest settlement of mankind after the deluge, is further confirmed by the geographical distribution of the nations by whom it was immediately surrounded. Some doubt has been, indeed, expressed, whether the immediate descendants of Noah, of whose establishment Moses gives an account, proceeded to their destination by the appointment of the patriarch ; or gradually extended themselves, from the centre of the growing population, as they required more ample tracts for their increasing families. After balancing the reasons which may be advanced in support of each opinion ; the evidence preponderates in favor of the former. That supposition agrees most naturally with the literal force of the passage which I have chosen for the text ; in which, though no division of the earth is implied, some distribution of the nations is intimated. It derives no small confirmation from the prophecy delivered by Noah on the destination of his pos-

terity ; which is verified in their present state to a degree that almost exceeds credibility. And it best accords with the regular disposition of the three stocks, from which the great continents have derived their population ; of whose settlements, as existing in his own times, the sacred historian has given so circumstantial a description.

From an inspection of the geographical position of the threefold race, that derived their descent from the three sons of Noah, and that preserved the tradition of their origin, in terming themselves Japetians, Hammonians, and Shemites ; it appears, that they had their respective boundaries determined by great chains of mountains. The intermediate region was occupied by the posterity of Shem, who were thus bounded on the east, by the elevated range which commences at Ararat and terminates in Mount Zagros ; and were enclosed on the west, by that line of hills which stretches from Sidon on the Mediterranean coast, to Eziongeber on the Erythræan : the great Caucasian range having formed their northern frontier. Along this mountainous barrier the descendants of Japhet extended themselves to the north ; and spread their colonies on either side to the coasts of the Caspian, Euxine and Ægean seas. While the progeny of Ham dispersed themselves to the south, into the African continent, and occupied

those regions which were watered by the Red Sea and the Mediterranean.

I. The outline thus rudely sketched from the facts supplied by the inspired historian forms the best guide to the Natural History of man ; from which it now remains that evidence be deduced in confirmation of the truth of the sacred record. Following up the clue which is here presented to us, we are not only enabled to shew from it, that the nations of whose settlements we have determined the bounds, derived their origin from the one family, whom the text represents as supplying the earth with its inhabitants ; but that the whole of the tribes which are scattered over its most distant regions derive their descent from the same original.

1. To the deduction of mankind from the three families descended from Noah's sons,—as established about the region of the Caucasian mountains, as dispersed to the north east through the Asiatic regions, and as settled to the south-west on the confines of the African continent,—the fullest confirmation arises from the investigations of science, in which the distribution is virtually adopted. Naturalists are now very generally agreed in deducing the whole human kind from a single family ; and in distinguishing them into three principal races ; the distribution of whom through the three great continents seems inexplicable, unless on the principles sug-

gested in the sacred writings. Having distinguished as peculiar races, the Caucasian or fair tribes, the Mongolian or yellow, and the Ethiopic or negro ; they identify them with the different regions, which the families of Noah's sons must have contributed to people, if the Scripture be admitted as historical authority. The nursery of the race which, as they conceive, has deviated least from the primitive type, they accordingly place near the great Caucasian range of mountains, from whence they derive their name. In admitting the distribution of the other varieties of our species through the Asiatic and African continents, while they allow that they descended from a common stock ; they leave the question of their origin and present state involved in difficulties, which will not be easily removed, if the direct clue that is presented in the inspired records be unnecessarily abandoned.

Nor is the conclusion to which we are thus led materially affected, by the modification which the subject receives, in the views of those naturalists who extend the pure races to five, and include the Malayan and American tribes in the number. As it appears from every inquiry into the progress of civilization and the early history of mankind, that these races, if regarded as varieties in the human species, must have arisen at a period comparatively late ; the exceptions which they create to the general

principle can have no influence upon the conclusion which we are concerned in maintaining, as strictly confined to the early division of our species. And the little apparent weight which they may possess wholly disappears, when the Asiatic descent of the tribes thus superadded to the purer races is admitted : as when they are thus referred to their original, that triple division is restored, on which the analogy between the views of Scripture and the deductions of Science is exclusively founded.

In as slight a degree is the same conclusion affected by the objections of the inquirers into the physical and civil history of the eastern nations, who have expressed some scepticism, whether the division of the naturalists be founded in nature and reason. Their objections like the preceding, as exclusively applicable to the present state of those nations, are beside the purpose of our immediate inquiries, which are confined to a period of the remotest antiquity. In a country subject to great and extensive changes from the nomadic habits of the people, and the devastating expeditions of native and foreign conquerors, those traits of national character were liable to be altered or effaced, which supply to science a foundation for its classification. While districts were subject to change their inhabitants from the migratory disposition of the natives, or the arbitrary will of the sovereign ;

varieties must have arisen in the population, which would form exceptions to the distinction of the naturalist, however solidly or judiciously founded. But as long as the great outline of the distribution is acknowledged to be correct; and it is permanently marked, not only in the geographical position, but in the features and the complexion of the distinctive races; sufficient evidence will remain of the analogy between the sacred and the physical history of mankind, to establish the divine character of Scripture.

On the objections, to which it may be thought, this conclusion is exposed, from the varieties that occasionally appear in the different races of mankind; and from the accidental dependence which color is observed to have upon climate and country; it cannot be necessary to dwell. As they contribute to prove that no solid objection arises from the diversities discoverable in the human species, *to the assumption, that all mankind are derived from a common stock*; they bring confirmation to the truth of the inspired annals, in which they are described as the descendants of the same parentage. This point being admitted, the question is reinstated on the original ground. For thus must we have recourse to a principle identical with that acknowledged in Scripture, to account for the triple division of the naturalists, which

has its foundation in the decided characters by which the races of man are permanently distinguished. As nature is thus addicted to deviate from her general laws, not only in producing spontaneous varieties in the different races, but in occasionally restoring the peculiarities of the first parents which have disappeared in their progeny; the characters by which they are decidedly marked become more difficult to explain on merely physical principles.

2. The generally received principle, that the whole human species are descended from the same stock, being acknowledged; the naturalist, in undertaking to reconcile it with the present state of mankind as dispersed over the world, is beset with the most formidable difficulties. The unreasonableness of the requisition will be readily admitted, that in a work of the antiquity of Scripture,—unless on the assumption of its inspiration,—a solution of those difficulties should be sought, to which science in its present state is barely, if at all competent. Not to insist on the very late attention which geographical inquiries excited among the ancients, and the necessary postponement of such inquiries to subjects strictly historical; and, with one splendid exception, these subjects were confessedly of a late cultivation among the orientalist: the mythological period of the annals of those nations, which consist in the most ex-

travagant fables, affords the justest criterion by which the sacred records should be comparatively estimated. If, on the contrary, these inspired compositions supply a clue, that, when followed regularly up, leads to the disengagement of the natural history of man from every difficulty in which it is perplexed ; it seems not easy to imagine a stronger test to which they can be submitted, in professing to be delivered by revelation.

As very vague and erroneous notions have been formed of that part of the sacred narrative, from which our deductions remain to be made, and which particularly describes the first peopling of the earth ; it will conduce not a little to the certainty of the result, to ascertain the precise extent of the first settlements of which Moses has given a description. By some of his commentators it has been unjustly supposed, that in his account, the partition of the entire earth was intended ; for, as it fell by inheritance to Noah after the flood, it is conceived he divided it by lot among his immediate descendants. But this notion, in which the ancients were inclined to acquiesce, has been judiciously rejected by the moderns. As they have determined, from their superior means of investigating the truth, the description of Moses should be understood to extend but to the regions which were known to the Israelites, and had

been visited by the Phenicians. And in this conclusion we may rest, but with this further restriction ; that in the inspired historian's description the whole of the inhabited region of the earth was included. As he expressly speaks in reference to the time, " when the families of " the Canaanites were spread abroad ;" his language cannot be strictly understood of the age of Noah, nor indeed of the time of the dispersion from Babel. The Phenicians, even from that early period, had manifested a spirit of commercial enterprise ; it is therefore not improbable that through them and the Midianites, with whom Moses was acquainted as the carriers between Palestine and Egypt, he was indebted for much of the local information with which he enriched the traditionary knowledge derived from his ancestors.

Whatever difficulties may have been encountered in identifying the particular regions in which the whole of Noah's posterity was settled ; they raise no impediment to the successful prosecution of our present researches. The settlements of the elder branches of the patriarch's descendants have been ascertained with every requisite accuracy, and no more is necessary for the attainment of our present purpose. Wherever they were placed, as it is only reasonable to conclude, their progeny for some generations would be collected around them ; near the spot which

they occupied, the settlement of the younger branches may be most naturally sought. And this supposition derives no small confirmation from the conclusion, in which every inquiry into the subject terminates; that the immediate progeny of Noah's three sons were the founders of the principal nations of antiquity.

To the settlement of this portion of Noah's family our attention may be therefore exclusively directed. As the three races of mankind were termed from the patriarch's sons; the principal nations into which they were divided were termed from his grandsons. Of these, sixteen have been enumerated in Scripture; seven of whom are ascribed to Japhet, four to Ham, and five to Shem: who, in establishing a patriarchal government in the regions where they were settled, laid the foundation of the great monarchies of antiquity. To the family of Japhet, the Cimmerian, Scythian, Median, Ionian, Thracian, Sarmatian and Armenian nations owed their origin; to that of Ham, the Ethiopian, Egyptian, Libyan and Phenician; and to that of Shem, the Persian, Assyrian, Chaldean, Lydian and Syrian.

The geographical position of the countries occupied by these nations, with perhaps the solitary exception of Lydia, is so plainly defined; that they have been generally recognised by the ancients, and have been ascertained by the

moderns beyond all reasonable ground of dispute. Of the vast tract, which has been thus portioned, and which extended from Scythia to Ethiopia in one direction, and from Persia to Thrace in the other, it is deserving of remark, that it includes the whole of the nations which history has deemed worthy of notice, for their early civilization and power, and that it extends on every side to nearly an equal degree round the central situation of Shinar. It is natural to suppose, the families that supplied the earth with inhabitants would not only proceed in different directions, but to nearly the same distance from the original point of dispersion. That the geographical distribution should be thus found to accord so wonderfully with the historical description, as that the representation should be marked in all its circumstances with the air of veracity, can be only attributed to that consistency which is among the distinctive characters of truth.

It may be further observed, as preliminary to the deductions which remain to be made from the statement of Moses, that his description of the first settlements of mankind must be understood as not merely commensurate with the countries that were known to his compatriots, but with the regions of the earth that were peopled in his own times. That the inhabited parts did not extend beyond the boundary

which he ascribes them, may be collected from the accounts of the father of profane history. From the dimensions which he assigns to Asia and Africa ; it appears, that those regions even in his own age were included within narrow limits. On comparing his statements with the descriptions of the sacred history, it may be concluded, that the Scythian and Sarmatian nations, in the age of the Jewish legislator, had not spread themselves northward beyond the banks of the Danube and Wolga ; and that the Ethiopians and Libyans had not extended themselves far to the south on the African continent: the perpetual snows having formed a natural barrier on the one side, as discouraging as the burning sands on the other, to the migration of colonies in either direction. From the settlement of the Greeks in the higher regions of Europe, and the expeditions of the Carthaginians to southern Africa, the true state of those countries might be accurately determined.

II. While the sacred history discloses the foundation of the division of mankind into the pure races ; and accounts for the origin and settlement of the most ancient nations of the earth ; it possesses the extraordinary merit of supplying a clue to the natural history of the whole of our species. From the few facts which it briefly details of the preservation and dispersion of the families that survived the deluge,

a satisfactory explanation may be deduced, not merely of the gradual advancement of the population of the earth to its present extent ; but a solution may be deduced of every difficulty in the physical characters of the races with which it is overspread, and in the different languages by which they are distinguished.

When the principle is conceded, that all mankind are the offspring of a common parentage ; and the entire population of the earth is regarded with reference to the concession : it may be naturally supposed, that, in proportion to their distance from the original, the evidence of their descent should be weakened. In undertaking to trace it to its source, considerable aid is however afforded us, in the facilities of communication between different regions ; in similarities in the appearance and customs, and more particularly the languages of different nations.

But before these criteria can be applied, in extricating the subject from its difficulties ; a just estimate should be formed of a remarkable passage of Scripture ; which has been found principally of use in accounting for the diversity of languages, that stands opposed to the notion that all mankind are derived from a common original.

1. It is unnecessary to enter into a detail of the circumstances recounted in Scripture, re-

specting the dispersion from Babel and the confusion of tongues, with which it was attended. Some difficulties have, however, arisen in the signification of the narrative of those events, but they seem to have originated in the dislocation of the text from its dependance on the incidents previously recorded. It should be on the contrary understood with reference not only to “the division of the earth into nations after the flood;” but to the foundation of “the kingdom of Babel in the land of Shinar,” by Nimrod; and the departure of Asshur from that land, into Assyria, where “he built the city of Nineveh.” That these events had preceded the dispersion from Babel, by some short interval of time, seems not less obvious, from the progressive course of the narrative, than from the opening of the account of the confusion of languages, and the direction pursued by the persons who were the objects of the miracle, in their migration to Babel. As that account is prefaced by the observation, that “*the whole earth* was of one speech and one language,” it plainly intimates, that it had been already “divided into nations by the families of the sons of Noah.” As it represents the builders of the tower, as “journeying *from the east* into the land of Shinar;” it as clearly supposes their previous sojourn, in that direction, to the regions of Assyria and Media.

It is thus not improbable, that the incursions of Nimrod, by which Asshur was dispossessed, and the Shemites dislodged from their possessions, had disturbed the order of settlement which had been projected by Noah. The stream of the population seems thus to have flowed back on its source, and brought the descendants of Japhet and Shem, who had passed from Shinar into the east, in contact with some of the progeny of Ham, who had possessed themselves of that region under Nimrod. To this spot, from whence they had departed in common, they seem to have returned, with the view of forming a permanent settlement. The tower which they had conspired to erect was intended for “a signal ;” by which they might be preserved from dispersion over the earth, when an encreasing population should compel them to migrate. This project, which would have frustrated the divine purpose for peopling the world, had it been carried into effect, was defeated by a miracle, which in confounding their language dissolved the confederacy, and completed the project for their general distribution over the earth, which had commenced under Noah.

To what extent the primitive language had been affected, in undergoing this miraculous change, does not indeed directly appear from the narrative of its circumstances. It has been conjectured, that it was confounded by an affec-

tion of the organs of speech ; which rendered them incapable of uttering particular sounds. It is obvious a change of this nature, would produce such dialectic peculiarities as would render the speaker as unintelligible, as if he delivered himself in a different language ; unless to those, who, from being affected like himself, could allow for his perverted enunciation. And this explanation recommends itself by many considerations. While it is fully adequate to the solution of every difficulty in the subject ; it is consistent with the principle by which all miracles must be tried ; to which it is requisite, that they be wrought without any superfluous exertion of power. It besides corresponds best with the literal force of the sacred text, which represents the change as effected by “ a confusion of the lip ;” and it may be nearly verified in the positive state of those languages which retain any evidence of their original. While, in the immense tracts through which they are diffused, they possess similarities that prove their descent from a common tongue ; the diversities by which they are characterised are such as would naturally arise from such an affection of the vocal organs, as may be thus conceived to have occasioned the confusion of tongues at Babel.

2. Of the character by which an affinity may be traced between different nations, the most

convincing are deducible from the similarity of their language. Where no history exists, and tradition is silent respecting their origin; the evidence of their descent by migration or colonization cannot be directly established. An identity in customs, more especially when they have no foundation in nature, may be supposed to indicate a common original; but as they may be imposed by conquest, or be adopted from commercial or casual intercourse, they afford, of themselves, no satisfactory criterion for coming to a conclusion. But no revolution to which war or commerce can give rise is sufficient to account for the sudden and universal adoption of the language of one nation, by another that is not allied to it by affinity or descent: the predominance of authority or of numbers may occasion a change or corruption in the speech of the vanquished, but cannot extinguish all likeness to its original. A character is thus established in the language of a people, by which their pedigree may be more certainly traced, than by any independant evidence, not strictly historical or traditional.

As far as this criterion admits of being elicited or applied, it tends to establish the truth of the sacred records, in describing the mode in which the earth has been peopled. Where the use of letters has given to a language permanence in its structure, or perpetuity in written composi-

tions ; as its primitive character may be ascertained, the origin of the nation by whom it is spoken may be determined on the strongest evidence, by which their descent can be attested. Of the three races, however, which were descended from Noah, in two at the least, the principle admits of the fullest exemplification. The conditions which apply so exactly to the Shemitic and Japetic races, must be, however, admitted to fail on the part of the Hammonians. As they have transmitted few proofs of advancement in civil polity, and none in literary cultivation ; on their part, the criterion cannot be applied, as it cannot be appreciated. The principle admits of that verification in the tongues of Shemitic descent, which have acquired from the early use of letters an unequalled permanence among the languages of the east, from whence its general application may be collected. In the vast tract of country extending from the Tigris to the Mediterranean, the languages known under that term were current ; and the diversities which distinguish them amount to little more than dialectic peculiarities. The Syriac, Chaldee, Hebrew, and Samaritan, which have been superseded in those regions by the Arabic, as the language of religion, possess an affinity thus close, as well in the stock of words, as in their construction. The observation may be nearly extended to the Palavi, that has given

place to the Persian, which is itself allied to the tongues of Japetic origin. The diversities, by which the languages thus allied are distinguished, consist chiefly in slight mutations in the terms, and peculiarities in the pronunciation ; which unpractised organs from their rigidity are generally incapable of expressing. These differences are, however, so numerous and embarrassing, as to render the languages unintelligible, to those who do not speak them vernacularly, unless by practice and study. And whatever be the cause to which they may be imputed ; it is obvious they would arise from an affection similar to that by which the primitive language was confounded at Babel.

As the languages denominated Japetic, like the races distinguished by that name, are more widely extended ; in them the same principle admits of a more striking exemplification. Between the languages of nations so widely apart as those who use the Sanscrit and Celtic, affinities have been traced, which from the impossibility of direct communication, demonstrate a descent from a common origin. The similarity, which is observed to extend through the languages of the nations which are interposed, and which is singularly exemplified in the Greek and Latin, is so striking, as to have occasioned their being classed under the common term of *Indo-European*. While the discrepancies be-

tween them and the languages of Shemitic descent are sufficiently marked to justify their being ranked in a different family, certain similarities, though of a character less decided, concur to prove them in some measure descended from a common ancestry. As those discrepancies frequently consist in convertible sounds, whereby an approximation is attainable, on the necessary mutations being made, to a primitive standard, in which their common similarities concur; we need not look beyond the solution which has been found in the one case, for an explanation of the peculiarities which occur in the other, but may refer them to the same preternatural causes.

In consequence of the barbarism into which the African nations were sunk, with the exception of the Egyptians and their colonists, we are deprived of the means of investigating the early state of their languages; and are of course precluded from extending the principle to the tongues of Hammonian descent, which has been applied to those of Shemitic and Japetic. The consideration of the Coptic, which forms an exception to this remark, as well as of the tongues at present current through Africa, is deferred for a short time. It will at present suffice to remark on this subject, that the observations which have been applied to the Asiatic and European languages, may be in some measure ex-

tended to the African. The Canaanites, it is very generally allowed, were of Hammonian descent; the Phenician, however, which it appears was their vernacular tongue, differed but in dialectic peculiarities from the cognate languages of the Hebrew.

3. However the state of the nations, as existing in the times of Moses, may admit of a satisfactory explanation, on the principles suggested in his writings; the condition of the various races at present dispersed over the earth may be deemed little reconcilable to his account of the origin of the whole human species. The separation of the continents, through which they are scattered, by immense oceans; the total want of resemblance not merely in their customs and language but their features and color, may be thought to raise an insurmountable objection to the notion of their descent, from the small remnant of mankind which was once collected at Shinar.

If the two points be admitted, on which I have insisted at some length, that the great nations of antiquity were descended from that source, and that in Moses' times they were contained within a comparatively limited compass; the difficulties which are here suggested may be cleared up or removed without any length of discussion. The revolutions which migration and conquest have effected in the space of thirty

centuries may be urged, as affording a sufficient reason for every difference between the state of mankind, as existing at present, and as described in Scripture.

The claims of the inspired record may be, however, vindicated on different and positive grounds. After the most laborious inquiries, into the migration of nations, their geographical distribution, and the affinities of their languages; it appears, that no elucidation of the obscurities in which those subjects are involved is attainable, if the clue which is furnished to the labyrinth by Scripture be causelessly rejected. From the last results of investigation, its divine authority admits of the fullest confirmation. The foundation which it has laid, for solving every difficulty in the natural history of man, admits of establishment, from a view of the direction in which the course of population proceeded; of the rate of its increase in the regions colonized; and of the relative position in which the nations have been settled.

(1.) On evidence strictly historical, it appears, that the stream of population has not only flowed into *Europe* from the East: but that its source must be sought in the region washed on either side by the Euxine and Caspian seas, and lying on the confines of Caucasus. The Cimmerian or Celtic nations proceeded on their migrations into the west from that point; urged onward by

the tide which pressed upon their rear, until they reached its farthest limits, in Spain and the British Islands. From the Scythians, whose encroachments gave the first impulse to their movements, the hordes of Gothic invaders descended, who dispossessed the Celts of their settlements to the south, and spread themselves into the northern provinces of Europe. The earlier advances of the Pelasgians, who colonized the provinces to the south and produced the Greek and Latin nations and their descendants, proceeded equally out of the East, though from its more southern latitudes. In settling themselves in Italy, they were influenced by the previous possession of the higher regions; which they found occupied by tribes of Celtic origin, in the Oscan, Sabine, and Ausonian races. The occupation of proper Greece which had been peopled by a branch of the primitive stock of mankind, precluded the encroachments of them and the Celts on this region, and compelled them alike to proceed for settlements more remote from the countries they had abandoned. In the whole of these movements the course of migration, as the Scripture attests, is uniformly from the East; the population by which the West was gradually overspread retaining the evidence of their descent in the oriental character of their languages, which have been accordingly classed as Indo-European.

The establishment of the Slavonian and Tartar or Turkish races followed the same course, and illustrate the same principle. Had history been silent on the time and circumstances of their migration; their establishment on the eastern and northern quarters of Europe would sufficiently declare that they passed into Europe out of the East, and were among the latest of the nations by whom it has been peopled. For the Finnish races, who, in forming a branch of the same stock, were equally of oriental descent, a settlement has been found considerably to the south of the tracts in which they are now scattered. From the barbarism and poverty in which they are sunk, the uninhabited state of the northern regions of Europe, into which they were driven by the encroachments of more powerful invaders, might be collected; were it not apparent in the unpropitious nature of the climate for colonization. Low as the degree is at which they are placed in the scale of civilization, evidence of their former settlement in the chain of Caucasus near the shores of the Caspian has been discovered by the traveller and antiquary: and the proofs of their oriental origin are confirmed by the affinity which their language bears to that of the Ostiaks and other Siberian Tchudes, which extends equally to the language of the Slavonians.

Whether, therefore, we regard the first or the

last of the nations that have contributed to the population of Europe, or direct our attention to any of the quarters in which they are settled ; the evidence accumulates with the progress of historical and philological research, that their origin is only to be deduced from that source from which it is the object of the sacred annals to declare them descended.

(2.) Of the progress of population in the higher regions of *Asia*, our knowledge is comparatively confined, from the limited sources which are open to inquiry. After the Shemite nations, on which I have delivered myself at large, and whose settlements amply confirm the position for which I contend ; the Medes, with whom the Persians and Parthians may be joined, are among the most distinguished of the oriental nations. The remains of their language are preserved in the Parsi ; which is supposed to form an intermediate link between the Sanscrit and the Gothic, and is most probably a descendant of the mother tongue which was the source of the affinity that pervades the Indo-European dialects. This conjecture is not merely supported by the central situation of the region in which the primitive tongue was vernacular, and its vicinity to that tract which was the nursery of the emigrant population of Asia. Of the nations derived from this source, some of the most remote retained evidence of their origin. The

Germans, it has been conceived, were derived from a Persian tribe of the same name ; and affinities in language and religion justify the conclusion, that from some kindred stock the Hindus also were descended. From that highly cultivated dialect of the Japetic, the Sanscrit, spoken by this people, the languages current in the Peninsula of India appear to philologists to be derived. While the genealogy of these languages affords sufficient evidence of the descent of the people by whom they are spoken ; the source from whence they have been deduced supplies adequate proof of the direction in which the migration proceeded, that extended the Asiatic population to its eastern limits.

In the northern and western regions of the continent, several races of a later origin are distinguished : of whom the Tongusians, Tartars and Monguls, the Ostiaks, Samoiedes and Koriaks are the principal. The similarities not only in the languages of these nations, but their appearance and customs, establish their descent from a common stock, with the natives of the lower and western regions. The diversities which they exhibit, on the other hand, create no greater objection to the evidence of their original, than arises from the variety of unallied tongues ; examples of which commonly occur among the scanty and scattered tribes of the most savage nations.

(3.) In extending the same principle to the other great continents of the world ; the nations of *Africa* and *America*, from the similarity of their condition, may be regarded in conjunction. As far as their origin is discoverable from external evidence, they have derived their descent from the regions of Asia. From that part of it with which they are more nearly connected, the commencement of the population and civilization may be traced in both continents. The primitive seat of polity and learning on which the reputation of the Africans principally depends, as fixed in Egypt, is placed at that point where it touches the Asiatic borders. In proportion as the distance increases from this point, the marks of cultivation decline, until it sinks into the lowest state of barbarism. The Carthaginians formed a separate and distant centre of African civilization ; but as they were originally a colony derived from the East, they bring additional confirmation to the principle, that it proceeded, with the course of migration from Asia.

It is no less apparent, that from the same quarter, and at that point where the two continents are nearest each other, America likewise derived its population. The native races which it contains are referred to a common centre in its north-western regions, by a classification of their dialects. The traditions of the most culti-

vated of its inhabitants represent the course of migration as descending from that point to the southern provinces ; and their testimony derives confirmation from a chain of nations extending from the Esquimaux to New Mexico. The connexion is established even more clearly in a transverse direction along the arctic regions, by a series of tribes corresponding in dialect, from the eastern extremity of the Asiatic coast to the western of the American. The inferences deducible from the rate of population, and the progress of civilization are farther corroborative of the conclusions founded on the affinities of language. In conformity to the interrupted communication between the two continents, and the remoteness of America from the centre of migration, the number of its inhabitants are proportionably reduced. While the natives of a single country in the old hemisphere are computed at two hundred millions, the entire population of the new has been variously estimated at twelve and twenty. The state of civilization, in which America was found by its European discoverers, maintained a proportion correspondent to its limited population. When compared with the age to which it had attained in Asia, and the height to which it had arrived in Europe, it must be inferred, that it commenced in America at a period comparatively recent.

(4.) The same observations apply with even

greater force and conclusiveness to *Australia*; the communication between which and Asia seems to be sufficiently defined by the direction preserved, and the communication established, by the Sunda islands. The great Archipelago of which these isles form a principal part, it admits of little doubt, derived its inhabitants from the peninsula of Malacca, where the Malay is vernacular. To this language their dialects generally conform; and the similarity in their customs adds strength to the assumption, that such is the source of their origin. Of the many rites in which they agree, and which as having no foundation in nature cannot be deemed accidentally like, the practice of tatooing the skin, of extracting the fore-teeth, the occasional observance of circumcision, and the general propensity to cannibalism, are remarkable examples. By coincidences in such customs, which are observed to be common to tribes separated from each other by immense tracts of sea and land, the possibility of a communication is proved between any nation of the entire Polynesian race, and the common centre from which they derived their original. The connexion of Australia with the great insular chain, which extends south east from Malacca, is directly established by correspondent affinities with Timor, the last of the series of isles; and the population of the continent is observed to coincide with

that of the islands, in containing the different varieties of our species, which are observed to be indigenous in Sumatra and Madagascar. From a colony of the Polynesian race established in the Society islands the groups widely scattered through the Pacific, and extending from the Sandwich isles to New Zealand, have been shewn to have derived their inhabitants. It is of little importance to our present purpose, whether the race thus widely dispersed be directly deduced from the islands of Luzon or Sumatra, or remotely derived from the peninsula of Malacca; and of as little, whether the source of the affinity which distinguishes their languages be sought in the Malay or its dialect the Tagala. The conclusion which I am engaged in establishing is little interested in the result of the question, whether their origin was properly insular or continental; although on balancing the evidence on either side, the authority appears to preponderate in favor of the latter. Under either supposition, the descent of the Polynesian and Australian population from the natives of Asia, and consequently from the common race of which Noah was the head, is necessarily established.

III. A difficulty may be still supposed to remain, in the diversity discoverable in the physical characters and the languages of mankind; by which the general position advanced in the

text may be considered affected. The immense difference in the physiognomy and particularly the color of entire races, for which no difference of clime or country will adequately account, may be deemed irreconcilable with their deduction from the one family, to which their origin is there imputed. The total discrepancy observable in the dialects of numberless tribes, particularly in the Australian, American and African continents, may seem at first sight as irreconcilable with the same position, as with the principle suggested by Revelation to account for the diversity.

1. On the physiological inquiries into the form of the human skull, and degree of the facial angle, no time need be wasted. These grave speculations, on which much learned trifling has been employed, may be committed to the care of the craniologist, to whose protection they seem likely to be finally consigned by the anatomist. A very small share of observation, on the disposition of nature, to vary indefinitely in every race, the human head and features, and to impress the members of a family with the lineaments of the parent, may supply us with an analogical instance from whence the satisfaction of our rational doubts may be extracted. By following up this principle, we may, with every necessary probability, conclude, how peculiarities which in one generation were accidental

and local, become connate and fixed in the succeeding; and may thence be transmitted from families to tribes, and from tribes to nations, as the progeny of a single pair contributes by degrees to supply a particular region or island with a growing population.

To the principle, by which diversity of color,—that places the widest difference between the races of man,—is deduced from local and accidental causes; it has been indeed objected, on actual observation, that it must be independant of climate and country, as nations of different hues and features are found settled in contiguous regions. But the observation of this anomaly cannot invalidate a fact, which is equally founded on experience, that by the influence of vertical suns the fairest complexions are invariably rendered swarthy. Still less can it obliterate the distinction, which is uniformly consonant to the operation of the same natural cause, between the natives of tracts situated in the different zones, whose color is generally conformable to their situation; the white races occupying the higher, and the black the lower latitudes. Though the antecedent causes, by which it has been observed the complexion is rendered dark, and the likeness of the parents transmitted to their descendants, may not be physically competent to the production of varieties; they may assist nature in its tendency

to originate them spontaneously. And whatever might be the peculiarity, in form or color, which thus became connate with the offspring produced under such circumstances, it is a principle admitted among physiologists, that it might be perpetuated in their progeny, as long as they were preserved untainted by foreign mixtures. When the physical character of a race had been thus formed, and transmitted for successive generations ; it is perfectly consistent with the same principle to conclude, that it would continue to prevail, though the accidents of place and temperature under which it had arisen were essentially altered.

Thus may the original objection remain in force, without diminishing of the general conclusion. For, as the production of a new race depends less on the accidents of place and climate than the coöperation of natural causes ; it is obvious that in the region where one people retained the peculiarities contracted from their descent, another would be merely subject to the temporary influences of the site or climate. In proportion as the races originating in such varieties continued to multiply ; it is obvious, that difficulties would increase to prevent the propagation of further varieties which might casually arise in the same nation. The peculiarities which sprang up in single families would disappear, in the alliances contracted with others

who retained the general characters of the race. It is probably owing to these causes, that as the aggregate population increases in the earth; the production of varieties in the species proportionally discontinue. And when tribes differing widely in their physical characters are found contiguous to each other; the difference between them is most probably to be imputed to the accident of one if not both of them having shifted their place of residence, and thus brought from regions essentially different the peculiarities by which they are respectively distinguished.

2. With as little force or effect can the immense numbers and disparity of the dialects, which are scattered particularly over the less civilized continents, be urged against the position, that mankind derive their language from the family to which the text ascribes their origin.

When the circumstances are considered, under which inconsiderable parties of naked savages occupy the new regions, which they may have accidentally reached by shipwreck or migration; it will appear most consonant to the peculiarities of the novel state in which they are placed, that great diversities should arise in their dialects. The original stock of words possessed by such a community must be necessarily scanty; as they want the terms expressive not merely of the arts but the common necessities of social life. If accident have even

separated them from a society, in which, from its advancement in civilization, such terms are current ; from the absence of the objects which they express, they must gradually fall into disuse, and thus become extinct in the course of a few generations. Should the region on which the new settlers are cast, differ widely from that which they have deserted : the objects which present themselves being new, they must occasion the introduction of new terms ; by which the old must be ultimately superseded. The productions of nature which attract the observation, as necessary to the subsistence or comfort of the emigrants ; the plants and animals from which they derive their food or shelter, as differing essentially from those with which they are already acquainted, may thus occasion a total change in the scanty nomenclature which constitutes their language. And as abstract terms are common only to the speech of a people who have attained some degree of intellectual cultivation ; as the few general terms for which savage tribes find use are liable to be supplanted by proper names ; as simple objects may be designated by their qualities, instead of by their common appellations : it is possible that the new dialect, at one remove from the source, may retain but few words, and probable, that at two, it may contain not a single word of the primitive language.

Where the settlers migrate in larger bodies, their dialects are liable to be affected in an inconsiderable degree by the operation of such causes. In proportion to their numbers the chances will be increased, that the terms of the mother tongue may be remembered; and in the same proportion obstacles must arise, to the introduction of new terms, from the arbitrary and conventional nature of language. In conformity to these principles, it is observable, that when the natives of any region consist of many small tribes, the languages spoken in it are numerous and diverse; and on the contrary, when the nations are few and populous, the affinity is not only closer which their dialects possess among themselves, but retain to the parent language. With this representation, the state of the dialects in the great continents of the world so fully accords; that the differences by which they are distinguished may be thence satisfactorily explained, and the objections removed, by which the theory of languages is affected, as founded in Scripture. Where it is obvious, from the remoteness of the situation, and the difficulties of communication, that any country derived its population from the multiplied and precarious sources which straggling hordes supplied, the tongues spoken in it are proportionably numerous and dissimilar. Thus while the languages, as the nations in Europe and Asia are

comparatively few and extended; those in Africa, which are nearly as multifarious as the tribes, are computed to amount to a hundred and fifty, and those in America to fifteen hundred; while in Australia they are found to be as various and dissimilar as the hordes with which it is scantily peopled.

3. To the theory, which is here advanced, it may be thought, that the continents of Asia and Africa furnish remarkable exceptions in the Coptic and Chinese, and the cognate tongues distinguished as monosyllabic. The deviation of these languages from the kindred dialects of Asia, to which we might naturally expect to find them closely allied, is however observed to be greater than can be explained on the principles offered to account for the diversities of the tongue in either continent. To remove this difficulty recourse has been had to the supposition, that they were imparted, at the time of the first formation of languages, or their confusion at Babel. No languages, however, appear to have slighter claims to a divine original than the monosyllabic. They are, on the contrary, of a purely factitious and arbitrary contrivance, and owe their existence to *the characters*, in which the nations by whom they are used convey their ideas. From the internal evidence of the written medium of the Chinese, and the principles on which the colloquial is constructed, it plainly

appears, that the *names* of those *symbols*, which are artificially formed, constitute the entire stock of words in the monosyllabic languages. As the imposition of the name was necessarily preceded by the invention of the character, and the discovery even of the method of writing is matter of historical record ; the factitious nature of the language seems established beyond reasonable controversion. The advantages of a general character and philosophical language, as we must thus consider the Chinese, and the literary and civil habits of the people by whom it is used, will satisfactorily explain the manner in which it has become generally current. In an extensive empire, where the vulgar tongue was liable to become unsuitable to the purposes of general use by dialectic varieties, the importance of a mode of universal communication would be readily acknowledged. And the necessity to study it, which is imposed on every one, who aspires to any office of honor or emolument, and who, by his proficiency in it becomes eligible to the highest, however humble his rank, have contributed, in process of time, to extend its use from the learned to the vulgar.

These observations admit, in some degree, of application to the Coptic ; to the structure of which, it is supposed the hieroglyphic characters of Egypt originally contributed. While the differences between that language and those of

Shemitic and Japetic descent, admit of a satisfactory explanation on this hypothesis; it derives no inconsiderable confirmation from a comparison of the principles on which the phonetic character of the Egyptians and the oral medium of the Chinese is constructed, which possess a curious coincidence. The notion of their alliance is not a little confirmed by the similarities which have been likewise traced between the sacred characters of the one people and the symbolical of the other; and which cannot be deemed accidental, as founded on no natural or obvious analogy. From a coincidence so extraordinary, the opinion of a profound orientalist, that the Chinese literature has had a direct dependance on the Egyptian, though from a remote period, acquires increasing probability. But waving every consideration which may be derived from the notion of such a connexion; if it may be assumed, that a principle, so arbitrary as that on which the symbolical characters of both nations are constructed, had any influence on the oral, as distinct from the written medium, in which they conveyed their ideas; whatever may be the discrepancies between it and the languages of the east, they will require no further explanation.

4. When the vastness and complexity of the subjects of which I have so far taken a rapid survey, is considered; from few of the various

and intricate topics, on which I have hitherto enlarged, can stronger confirmation be deduced in favor of the divine character of Scripture. Were we, in estimating its merits, to regard it merely on the low ground of historical fidelity, without immediate respect to its inspired authority ; to form any estimate of its pretensions, the just views which it opens into the natural as well as the civil history of our race, should be compared with the crude and extravagant fables, which the most wise and experienced nations of antiquity have transmitted, as the records of their origin. But it is only by a comparison with the ablest systems which have been devised to solve the difficulties in the physical history of man, and in the state and diversity of languages, that its divine character can be fully appreciated. Of the essays in which those subjects have been professedly developed, the most successful are those which have drawn most copiously from the sacred source, that inspiration has opened in Scripture. Where its authority has been deserted ; in proportion to the extent of the deviation has been the magnitude of the failure. In exemplification of this charge, we need not pass the instance of the learned philologist, whose attention has been particularly directed to the classification of the oriental nations and languages. In his endeavour to reconcile the traditions of the East, with

the present distribution of the natives, and the diversities in their languages ; he substitutes the notion of several inundations, for the scripture account of a general deluge. And thus his hypothesis becomes directly chargeable with the grossest improbabilities. For thus are we implicitly required to believe, that the several preservations, recorded of the persons who survived the different floods, were effected in a manner so nearly alike, that the traditionary account of them varies in no essential circumstance. Whereas a solution, which is atonce simple and adequate, presents itself for every difficulty, in the one deluge which is acknowledged by Scripture ; and which is exclusively reconcilable with the coincidence in the traditionary accounts of some such catastrophe, among nations which were widely dispersed and variously descended.

Having been thus far heard in explanation of my views, I shall no longer trespass on the indulgence which I have received, than to offer a few cursory remarks, in bringing my labors to a conclusion. Whatever be the opinion which is formed of the task in which I have engaged ; it will not, I hope, be looked upon as uncalled for at a time, when the interests of Revelation are not merely overlooked, but the subject deemed incompatible with the cultivation of Science. For the evil which may be apprehended from the dissociation of those subjects, which it has

been my object to assimilate; I cannot but think an aggravation rather than a remedy is provided, in every essay which consigns Religion for support, to the alliance that may be formed between Natural Theology and Philosophy. For, as I cannot acknowledge any difference between the opinions of the Deist and Infidel; I cannot perceive, how the establishment of such analogies as may be thus elicited can contribute to uphold the faith of a Christian. On the result of my endeavours to restore Revealed Religion to that importance which Natural has engrossed; I can in no place, I am sensible, be less qualified to speak, than before the auditory which now honours me with a hearing. I may be, however, I hope, allowed to observe, that unless the attempt in which I have engaged has wholly failed, some objections to which Revelation has been exposed are not merely removed; but some accession has been made to the evidence by which it is supported. When the nature of the analogies which have been urged in its favor is considered; if their validity be admitted, it cannot be consistently denied, that they not only contribute to prove the truth, but to establish the inspiration of Scripture.

NOTES.

LECTURE I.

P. 2. l. 24. IT has been laid down as a fundamental rule, by the great founder of the experimental Philosophy, that the investigation of natural causes was alone conducive to the advancement of physical Science. Bacon. de Augment. Scient. lib. iii. cap. iv. tom. i. p. 109. d.

P. 2. l. 29. That the proudest object of the natural philosopher is to subject all nature to physical laws, may be exemplified from the highest principle which is attained in the experimental philosophy. To evade the objection of Leibnitz to *gravity*, as introducing “the occult causes” which had been exploded from the new philosophy; some of the disciples of Newton, with little countenance from their master, have had recourse to the summary expedient of the old dramatists, who in such difficulties recurred to the *θεὸς ἀπὸ μηχανῆς*. (Cf. Leibnitz. Opera, tom. ii. p. 165. Cotes. Præf. in Princip. Newton. p. xix. Newton, Works, vol. iv. p. 438.) One of the most enlightened of them, who was chosen to be the translator of his works, fully confirms the observation which has been hazarded, on this subject, in the text. Dr. Clarke, while employed in defending the principles of his master’s philosophy against the objections of his great continental rival, observes, “Si M. Leibnitz, ou quelque autre philosophe, peut expliquer ces phénomènes (l’attraction, la gravitation, &c.) par les loix du Mécanisme, bien loin d’être contredit, tous les savans l’en remercieront.” V. Repliq. de M. Clarke, Leibnit. Oper. tom. ii. par. 1. p. 193.

A still greater authority, and more successful follower and rival of Newton, has positively engaged in the attempt: Laplace, while he expressly sneers at final causes, under-

takes to supersede the Primary Cause, by such as are mechanical and physical: Voy. *Système du Monde*, liv. iv. ch. xv. p. 283. sq.

Although Newton is wholly unassailable by the objection, he seems not to have been altogether free from the contagion of divining into matters thus high and inscrutable. His letter to Boyle upon gravity, shews how far his ambition extended to carry up physical causes to a height, which cannot be easily reconciled with those termed *final*. See his Works, vol. iv. p. 385. In his correspondence with Dr. Bentley, on the same subject, he uses some expressions of which it is too lenient to pronounce, that they are rather unguarded. Thus in speaking of the inclination of the earth's axis, as a final cause, by which a Deity might be proved, he observes; "the diurnal rotation of the sun and
" planets, as they could *hardly* arise from any cause purely
" mechanical, so by being determined all the same way with
" the annual and menstrual motions, they seem to make up
" that harmony of the system, which, as I explained above,
" was the effect of choice *rather than chance*." Newton, Lett. I. to Bentley, Works, vol. iv. p. 430.

The diffidence and sagacity of Newton furnished Laplace with the opportunity of displaying, if not his superior sense, his presumption and vanity. It seems to have been his ambition to make up the acknowledged deficiencies of Newton's hypothesis; by supplying, for the Intelligent Agent, to which that incomparable philosopher had referred, merely physical causes. Newton states in the following words the difficulty which he found in explaining, by any such causes, how the matter of the sun and planets "should
" divide itself into two sorts, and that part of it which is fit
" to compose a shining body should fall down into one
" mass, and make a sun; and the rest which is fit to com-
" pose an opaque body should coalesce, not into one great
" body, like the shining matter, but into many little ones." (Newton, *ibid.* p. 430.) The removal of this difficulty, Laplace seems to have had in view, in his recommendation,

respecting the law of affinities: “Au milieu de ces incertitudes, le parti le plus sage est de s’attacher à déterminer par de nombreuses expériences *les loix des affinités*; et pour y parvenir le moyen qui paroît le plus simple est *de comparer ces forces à la pesanteur*.” (Laplace, *ibid.* p. 287.) The direct object of this philosopher’s hypothesis appears to have been that of accommodating the Cartesian vortices to the Newtonian theory of gravitation. Comp. Laplace, *ibid.* Newton, *ibid.* p. 430. As Boyle has traced the vortices of Des Cartes to the *συστροφαι* of Epicurus; the true tendency of the systems founded upon these principles, in neglect of an Intelligent Primary Cause, sufficiently reveals itself, in their deduction from a mode of philosophy, which has been ever charged with an atheistic bias. See Boyle’s *Disquis. on Final Causes*, Works, vol. iv. p. 523.

P. 3. l. 5. That the Natural Philosophy, as conducted on the principles recommended by Bacon, has a wayward tendency to materialism and atheism, has been admitted and deplored by well disposed philosophers. Thus Leibnitz acknowledges, in his controversy with Clarke, “Je ne crois pas qu’on ait sujet d’ajouter, que les principes mathématiques de la Philosophie sont opposés à ceux des matérialistes. Au contraire, *ils sont les mêmes*, excepté que les matérialistes, à l’exemple de Démocrite, d’Epicure, et de Hobbes, *se bornent aux seuls principes mathématiques*, et n’admettent que des corps: et les *mathématiciens Chrétiens* admettent encore des substances immatériels.” (Leibn. Oper. tom. ii. part 1. p. 112.) How far the latter exception goes, in limiting the general assertion, may be gathered from the number of philosophers who have manifested any desire to be regarded as Christians. It is stated also by Boyle; “I observe, not without grief, that of late years, too many, otherwise perhaps ingenious men, have with the innocent opinions of Epicurus embraced those irreligious ones, wherein the Deity and providence are quite excluded from having any influence upon the motions of matter, all whose productions are referred to the casual

“concourse of atoms. For this reason, I thought it a part
 “of my duty, as well to the most wise Author of things, as
 “to their excellent contrivance and mutual subserviency, to
 “say something, though but briefly, yet distinctly and ex-
 “pressly, to shew, that there are things that argue a far
 “higher and nobler principle than is blind chance.” Boyle,
ibid. p. 540.

An adherence to the Epicurean method which Bacon has so highly eulogised, at the expense of the Platonic and Aristotelian, has contributed to fasten the charge of atheistic bias upon natural philosophers; and it is so far founded in justice, as the philosopher who is the object of that panegyric followed, in the atomic philosophy, a professed atheist. Vid. Cicer. de Finib. lib. i. cap. xvii. lib. iv. cap. xiii. Under this imputation not only Hobbes and Spinoza, but Bacon and Des-Cartes have respectively fallen, though the charge, as respects the two last, is false and injurious. Vid. Brucker. Hist. Philos. tom. v. p. 105. 299. The distribution of Lord Bacon’s subject is a sufficient answer to the imputation cast upon him, as groundless and calumnious: his object was clearly not to banish the consideration of a First or of final causes from the pale of Philosophy, but to transfer them from the province of physics to that of metaphysics. Conf. De Augment. Scient. lib. iii. 1. 4. ix. 1. On the Advancement of Learning, b. i. vol. ii. p. 434. c. b. ii. p. 470. *infr.* note on p. 23. l. 14.

P. 6. l. 20. It is only necessary to produce on this subject the declaration of two of the most celebrated names in the annals of Philosophy.

Bacon. de Augment. Scient. lib. iii. 4. p. 111. “De-
 “mocratius et Epicurus cum atomos suos predicabant, eous-
 “que a subtilioribus nonnullis tolerabantur; verum cum ex
 “eorum fortuito concursu, fabricam ipsam rerum absque
 “mente coaluisse assererent, ab omnibus risu excepti sunt.
 “Adeò ut tantum absit, ut causæ physicæ homines a Deo et
 “*providentiâ* abducant, ut contrà potius philosophi illi qui
 “in iisdem eruendis occupati fuerunt, *nullum exitum rei*

“*reperiant, nisi postremò ad Deum et providentiam confugiant.*”

Newton. Princip. ad fin. “Hunc [Deum] cognoscimus solummodò per proprietates ejus et attributa, et per sapientissimas et optimas rerum structuras et *causas finales*, et admiramur ob perfectiones; veneramur autem et colimus *ob dominium*. Colimus enim ut servi, et *Deus sine domino, providentiâ, et causis finalibus, nihil* aliud est quàm Fatum et Natura. A cæcâ necessitate metaphysicâ, quæ utique eadem est semper et ubique, nulla oritur rerum variatio. . . *Tota rerum conditarum pro locis ac temporibus diversitas*, ab ideis et voluntate Entis, necessariò existentis, solummodò *oriri potuit . . .* Et hæc de Deo; *de quo utique ex phenomenis disserere ad Philosophiam Naturalem* pertinet.” Comp. Lett. IV. to Bentley. Works, vol. iv. p. 441.

The authorities cited in the annexed note will sufficiently shew, that with the names of Bacon and Newton, those of Leibnitz, Des-Cartes, Boyle, Clarke, &c. may be joined, in substantiation of the same position.

P. 7. l. 7. The necessity of admitting a Primary mover, to account for the first impulse imparted to matter, is not merely acknowledged by Des-Cartes; but the position is fundamental in his philosophy, as will appear from the subjoined extracts. Even Hobbes, who has been suspected of atheism, has not denied it: Vid. Brucker. Hist. Phil. tom. v. p. 309. 174.

As the sanction which the same principle has received from Leibnitz, Boyle, and Clarke, has added to its weight, their testimony may be fully cited.

Boyle, Disquis. on Final Causes ut supr. p. 520. “And on this occasion let me observe that the *fundamental tenets* of M. Des-Cartes’ own philosophy are not by himself proved by arguments strictly physical, but either by metaphysical ones, or the more catholic dictates of reason, or the particular testimonies of experience. For when, for instance, he *truly* ascribes to God all *the motion* that is *found in matter*, and consequently all the phenomena that

“ occur in the world ; he proves not by an argument pre-
 “ cisely that God, who is an immaterial agent, is the effi-
 “ cient cause of motion in matter ; but only by this, that
 “ since motion does not belong to the essence and nature of
 “ matter, matter must owe the motion it possesses to some
 “ other being: and then it is most agreeable to common
 “ reason to infer, that since matter cannot move itself, but
 “ it must be moved by some other being, that being must
 “ be immaterial, since otherwise some matter must be able
 “ to move itself, contrary to the hypothesis. And when
 “ Des-Cartes goes to demonstrate, that there is always in
 “ the universe the selfsame quantity of motion, (that is, just
 “ as much at any one time, as at another,) and consequently,
 “ that as much motion as one body communicates to an-
 “ other, it loses itself ; he proves it by the immutability of
 “ God, which is not a physical argument strictly so called,
 “ but rather a metaphysical one ; as he formerly proved
 “ God’s being the cause of all motion in matter, not by
 “ principles peculiar to physics, but by the common grounds
 “ of reason.”

Leibnitz, Princip. de la Nat. et de la Grace fond. en Rai-
 son. Oper. tom. ii. p. 40. “ Mais si l’on avoit sù du
 “ tems de M. Descartes cette nouvelle loi de la Nature,
 “ que j’ai démontrée, qui porte que non-seulement la même
 “ quantité de la force totale des corps, qui ont commerce entre
 “ eux, mais encore leur direction totale se conserve; il seroit
 “ venu apparemment à mon Système de l’Harmonie prééta-
 “ blie Ce système de l’harmonie préétablie fournit une
 “ nouvelle preuve inconnuë jusqu’ici de l’existence de Dieu,
 “ puisqu’il est bien manifeste, que l’accord de tant de sub-
 “ stances, dont l’une n’a point d’influence sur l’autre, ne
 “ sauroit venir que d’une Cause Générale, dont elle doit
 “ avoir une puissance et une sagesse infinie pour préétablir
 “ tous ces accords.”

Clarke, 3rd Def. of Immort. of the Soul, Works, vol. iii.
 p. 849.—“ The true theory of Gravitation, as it has been
 “ made out by that excellent person whom you just now

“ so unfortunately cited, does in its obvious and necessary
 “ consequences, more entirely subvert the very founda-
 “ tions of all possible hypotheses, wherewith materialists
 “ would undertake to explain the Phenomena of nature
 “ mechanically, by the mere powers of matter and motion ;
 “ than any discovery in natural and experimental Philoso-
 “ phy that has ever yet been made in any age: showing
 “ the matter of the universe to take up almost an infinitely
 “ small and inconsiderable part of that space, which you
 “ suppose to be filled with it ; bearing in truth far less pro-
 “ portion to it, then a tennis ball does to the body of the
 “ Earth. And consequently, that the great Phenomena
 “ of nature cannot possibly depend upon any mechanical
 “ powers of matter and motion, but must be produced by
 “ the force and action of some higher principle. And so
 “ leading us even with mathematical certainty, to *Immate-*
 “ *rial Powers* ; and finally to the Author of all Power, the
 “ great Creator and Governor of the World.” He refers
 to Newton’s Optics, p. 314. 346. ed. Lat. See also Burnet,
 Theor. of the Earth, b. ii. ch. x. p. 403.

Ibid. l. 9. See Clarke’s Dem. of the Being and Attrib. of
 God. prop. viii. §. 4. Works, vol. ii. p. 547. c. Cf. p. 531. b.

P. 9. l. 19. See Clarke’s Dem. ut supr. p. 530. d. sq.
 p. 542. b.

P. 10. l. 13. Comp. note to p. 6. l. 20. p. 23. l. 9. p. 34.
 l. 14.

Ibid. l. 20. See Penn’s Compar. Estim. of Mosaic. and
 Mineral Geology, vol. i. p. 33. sq. It is but an act of just-
 ice to cite on this occasion the very peculiar opinions held
 on this subject by Bacon, who seems to exclude natural
 causes from the work of Creation ; supposing, that there
 was a double emanation of virtue from God,—that in fact,
 he created matter in a moment by his power, but took six
 days to dispose it by his wisdom ; vid. De Augment.
 Scient. lib. i. vol. ii. p. 46. b. On the Adv. of Learn. b. i.
 vol. ii. p. 434. c. But he justly defines the natural as
 distinguished from the preternatural ; asserting (New At-

lantis. vol. iii. p. 241. c.) “that the laws of nature are “God’s own laws, and he never exceeds them but upon “great cause”. . . “never working miracles but to a divine “and excellent end.” The same distinction is more fully expressed in his “Confession of Faith,” where he declares his opinion on the subject of nature, providence, and miracles. Works, vol. iv. p. 414. From the correspondence of Newton with Bentley, it clearly appears, that he did not conceive what we call the laws of nature suspended at the Creation; see his Works, vol. iv. p. 430. sq. comp. note to p. 16. l. 7; and it is probable, that at bottom, Bacon was of the same opinion; see note to p. 23. l. 14. comp. note to p. 14. l. 3. p. 130. l. 15.

P. 11. l. 27. See Burnet, *Theory of the Earth*, b. i. ch. viii. p. 142. b. ii. ch. xi. p. 432. 438. 440. Whiston, *New Theor. of the Earth*, p. 1.

Ibid. l. 29. *Voy. V. Ecrit. de Leibnitz à Clarke*, §. 110. et *V. Repliq. de Clarke*, §. 110. p. 189. c. ap. Leibnitz, *Oper. tom. ii.* p. 167. 189. Butler, *Analogy of Nat. and Rev. Relig.* part 2. ch. ii. §. 2. p. 172. edit. 18mo.

P. 13. l. 10. *V. Repliq. de Clarke à Leibnitz ut supr.* p. 189.—“Il s’ensuit, ou que les mots d’Action de Dieu “naturelle et surnaturelle, sont des termes dont la signification est uniquement relative aux hommes; parceque nous “avons accoutumé de dire qu’un effet ordinaire de la puissance de Dieu est une chose naturelle, et qu’un effet extraordinaire de cette même puissance est une chose surnaturelle; (ce qu’on appelle les forces de la Nature, “n’étant véritablement qu’un mot sans aucun sens,) ou “bien il s’ensuit que par une action de Dieu surnaturelle, “il faut entendre ce que Dieu fait lui-même immédiatement; et par une action de Dieu naturelle ce qu’il fait “par l’intervention des causes secondes Je ne crois “pas que l’on puisse inventer une troisième distinction sur “la matière dont il s’agit ici.”

P. 14. l. 3. The laws and constitution of nature, as conducted by secondary causes, are asserted by those philoso-

phers who maintain, that the providence of God interposes in the government of the world.

Bacon. Confess. of Faith, Works, vol. iv. p. 413. "God created heaven and earth, and all their armies and generations, and gave unto them constant and everlasting laws, which *we call* nature; which is nothing but the laws of the creation; which laws nevertheless have had three changes. . . . The laws of nature, which now remain and govern inviolably till the end of the world, began to be in force when God first rested from his works and ceased to create; but received a revolution, in part, by the curse, since which time they change not." He proceeds, in continuation, to assert, that God accomplishes his divine will, in all things, great and small, singular and general, by providence, without violating the course of nature.

Vid. Leibnitz, Princip. de la Nat. et de la Grace fond. en raison. tom. ii. p. 40. Boyle, Usefuln. of Nat. Phil. Works, vol. i. p. 446. Disquis. on Final Causes, prop. 5. vol. iv. p. 550. Burnet's Theor. of Earth, b. i. ch. viii. p. 143. Clarke, V. Repliq. à Leibnitz. ut supr. §. 124. p. 193. Whiston, New Theor. of Earth, b. iv. ch. i. p. 285.

P. 16. l. 7. De Luc, Lett. Géolog. p. 81. Greenough, Crit. Exam. of First Prin. of Geol. p. 172. I cannot but think, that the meaning of Newton is strained far beyond his intention, when he is supposed to exclude the operation of what we call natural laws from the work of creation. His object, on the contrary, appears to be that of including, *with* those laws then first set in operation, the agency of an Intelligent and Omnipotent Disposer. This is, I think, not merely obvious from the phraseology of the annexed sentence, which has been cited in support of the antecedent opinion. "It became Him who created them to set them in order; and if He did so, it is unphilosophical to seek for any other origin of this world, or to pretend that it might rise out of a chaos by the *mere* laws of Nature; though, being once formed, it may continue by those

“ laws for many ages.” (Optics, lib. iii. in fin.) It is almost needless to observe, that here is no exclusion of “ the laws of nature” *with* the Deity ; but of “ the *mere* laws of nature,” i. e. *without* Him: the proscription being palpably directed against the atomic philosophy, which the early cultivators of the experimental philosophy were constant in disclaiming: see note on p. 6. l. 20. The same view of Newton’s meaning may be, I conceive, maintained, from the context, by which the forecited passage is preceded; “ It seems probable to me,” he observes, “ that God in the beginning formed matter in solid, massy, hard, impenetrable, *moveable particles*, of such sizes and figures, and *with such other properties*, and in such proportions to space, as most conduced to the end for which he formed them.” I can perceive nothing, to our present purpose, in this passage, but that the *physical* causes were made conducive to the *final*; the proof of the position, that “ the counsels of an Intelligent Agent” were employed in the creation, depending on the *latter*, as evincing intelligence and design. It is here also, as in the former case, palpable, that the proscription is merely directed against the atomic philosophy, in which such agency was positively excluded. For, I profess, I can as little conceive, how physical causes can be excepted, when matter is supposed to receive “ those properties” which conduce to the production of final causes; as how “ the laws of nature” can be excepted, where the causes of both kinds are supposed to be in operation. That the meaning of Newton is perverted, when it is taken in any other sense, equally appears from his method of reasoning upon the same subject on different occasions. Thus in his correspondence with Bentley, he has not recourse to the sole agency of the Deity; but reasons on the supposition that gravity was in operation, and merely claims for the intervention of “ supernatural power,” to give it a new direction. See note to p. 69. l. 11. p. 75. l. 22.

P. 17. l. 9. See Burnet, 2nd Append. to Theor. of Earth.

p. 41. Whiston New Theor. b. ii. hypoth. iii. p. 94. Penn's Comp. Estim. par. ii. ch. x. p. 279.

P. 20. l. 28. See Burnet's Theor. b. ii. ch. xi. p. 438. sq. Whiston's New Theor. b. iv. ch. i. p. 284. sq.

P. 21. l. 6. The *principium sufficientis rationis*, which was adopted by Leibnitz, and the *lex parsimoniæ*, which was introduced by D'Alembert, are but modifications of principles which were known to the ancient philosophers. The former Leibnitz himself refers to Archimedes; in distinguishing between the principles which were fundamental in mathematics and physics. "Mais pour passer," he observes, "de la Mathématique à la Physique, il faut encore un autre principe, comme j'ai remarqué dans ma Theodicée, c'est le Principe de la Raison suffisante; c'est que rien n'arrive sans qu'il y ait une raison pourquoi cela est ainsi plutôt qu'autrement. C'est pourquoi Archimède, en voulant passer de la Mathématique à la Physique dans son livre de l'Equilibre, a été obligé d'employer un cas particulier du grand Principe de la Raison suffisante." II. Ecrit à Clarke. Oper. tom. ii. par. i. p. 113.

It seems not just to refuse some knowledge of the same principles to Aristotle; who appears to have very nearly attained the distinction for which I contend. "Though the Aristotelians," observes Boyle, "whatever their master thought, did not believe the universe to have been *created* by God, yet because they asserted, that animals, plants, &c. act for ends, they were obliged to acknowledge a provident and powerful Being, that *maintained and governed* the universe, which they called Nature; though they too often dangerously mistook, by sometimes confounding this being with God himself, and at other times speaking of it as coördinate with him, as in that famous axiom of Aristotle, *Deus et natura nihil faciunt frustra*." Disquisition Fin. Caus. Works, vol. iv. p. 522. The interposition of the Deity being admitted by the philosopher, who chiefly erred in considering matter eternal; the censure passed upon him by Bacon appears to be misapplied, particularly

in a passage which acknowledges a difference between the operations of nature and providence: “Dei sapientia effulget mirabiliùs, cùm Natura aliud agit, Providentia aliud elicit, quàm si singulis schematibus et motibus naturalibus Providentiæ characteres essent impressi. Scilicet Aristoteli, postquam Naturam finalibus causis impregnâset, ‘Naturamque nihil frustra facere,’ suique voti semper esse compotem, si impedimenta abessent, et hujusmodi multa eò spectantia posuisset, ampliùs Deo non fuit opus.” De Augm. Scient. lib. iii. cap. iv. p. 111. The error of Aristotle seems, however, not to have greatly exceeded that of Ray, who follows Cudworth, in adopting the notion of a *plastic nature* which he makes intelligent. Wisd. of God in the Creat. p. 36. But the expression of the ancient philosopher admits of defence on the principles of a much sounder philosophy; that is injudiciously rejected by Ray, for the visionary notion of the modern Platonists. “Nor do I by this deny,” observes Boyle, “that it may in a right sense be said, as it is wont to be in the schools, that *Opus naturæ est opus intelligentiæ*: neither do I reject such common expressions as Nature always affects and intends that which is best, and nature doth nothing in vain.” On Usefulness of Nat. Phil. Essay IV. Works, vol. i. p. 446. He had previously described, in a manner no less conformable to sound theology than philosophy, the probable method in which the laws of nature were first brought into operation. See note to p. 23. l. 14.

P. 23. l. 14. In the admission of a final cause, that of a Primary Cause is necessarily included. Dr. Clarke has even asserted, that “if there be any final cause of any thing in the universe; then the Supreme Cause is not a necessary but a free agent. This consequence also,” he adds, “Spinoza acknowledges to be unavoidable. And therefore he has no other way left but with a strange confidence to expose all final causes, as the fictions of ignorant and superstitious men.” Dem. of Being and Attrib. of God, Works, vol. ii. p. 551.

It is a fatal mistake to suppose, that the consideration of final causes is incompatible with the subject of philosophy. Though Bacon has pronounced an attention to them unfriendly to the investigation of physical truths, he has not excluded them from the pale of legitimate science. “Neque hæc edò dicimus,” he observes, “quod causæ istæ finales veræ non sint, et inquisitione admodum dignæ in speculationibus Metaphysicæ; sed dum in physicarum causarum possessiones excurrunt et irruunt, miserè eam provinciam depopulantur et vastant. Alioquin si modò intra terminos suos coerceantur, magnoperè hallucinantur, quicunque eas physicis causis adversari aut repugnari putent.” De Augment. Scient. lib. iii. cap. iv. p. 110. d. Boyle, who considered this subject more attentively and patiently, observes, to the same effect; “the neglect of efficient causes would render physiology useless; but the studious investigation of them will not prejudice the contemplation of final causes; for since it is truly said, if it be rightly understood, that *opus naturæ est opus intelligentiæ*, the wise Author of nature has so excellently contrived the universe, that the more clearly and particularly we discern how congruously the means are to the ends to be obtained by them, the more plainly we discern the admirable wisdom of the omniscient Author of things; of whom it is truly said by a prophet, that ‘he is wonderful in counsel, and excellent in working.’ Nor will the sufficiency of the intermediate causes make it needless to admit a First and Supreme Cause; since that order of things, by virtue of which the means become sufficient to such ends, must have been an Intelligent Cause.” Disquis. on Fin. Caus. p. 550.

Nor has Newton and his great rival Leibnitz been less forward to admit the existence of the First and final causes, and to acknowledge them as legitimate subjects of philosophical discussion. By the former it is observed in concluding his immortal work. “Hunc [Deum] cognoscimus solummodò per proprietates ejus et attributa, et per sa-

“ pientissimas et optimas rerum structuras et *causas finales*,
 “ et admiramur ob perfectiones, veneramur autem et coli-
 “ mus ob dominium.” Concluding with the remark ; “ Et
 “ hæc de Deo ; de quo utique ex phænomenis disserere ad
 “ Philosophiam Naturalem pertinet.” Princip. ad fin. By
 Leibnitz it is equally observed,—in distinguishing between
 efficient and final causes, and shewing how the latter imply
 a Superior Cause who is a Free Agent ;—“ Les forces na-
 “ turelles des corps sont toutes soumises aux loix mé-
 “ caniques, et les forces naturelles des esprits sont toutes
 “ soumises aux loix morales. Les premières suivent l’ordre
 “ des *causes efficientes*, et les secondes suivent l’ordre des
 “ *causes finales*. Les premières opèrent sans liberté, comme
 “ une montre ; les secondes sont exercées avec liberté, quoi-
 “ qu’elles s’accordent exactement avec cette espèce de mon-
 “ tre, qu’une autre Cause Libre Supérieure a accommodée
 “ avec elles par avance.” Ecrit V. à Clarke §. 124. Oper.
 tom. ii. p. 169.

If that be conceded which cannot be reasonably denied,
 that the distinction between natural and supernatural operation vanishes with reference to God ; when we thus comprehend “ the indagation of final causes” in the objects of legitimate science ; it will not be easy to discover any difference between natural philosophy and theology, as far as the investigation of first principles is concerned. This observation derives some confirmation from the instance of Bacon, and will explain his object, in seemingly excluding the consideration of natural causes, from the work of creation ; the distinction between natural and supernatural disappearing, where the operator is conceived to be God. In confirmation of this view of his intention, it may be observed, that he emphatically declares, “ the laws of nature are *God’s own laws*,” and “ what *we call* nature is nothing but *the laws of the creation* :” see notes on p. 10. l. 20. p. 14. l. 3. Such, in effect, is the just distinction of Clarke, in observing ; “ il est certain, que le *naturel* et le *surnaturel* ne diffèrent en rien, l’un de l’autre, par rapport à Dieu : ce ne

“ sont que distinctions *selon notre manière de concevoir les choses.*” Repliq. II. à Leibnitz, ut supr. p. 119.

P. 25. l. 12. As a curious example of the futile attempts of men of science to exhibit the first principles of the doctrine of the Infinite in a rational point of view ; the following passage may be extracted from the work of a learned professor, to which my attention was directed by a foreign mathematician of the highest celebrity. The observation, in which the extract commences, will justify my selecting it, as a specimen of the *reasoning*, which is employed to such purposes. Compend. de Matemát. tom. ii. cap. i. p. 3. por. D. F. Verdejo Gonzalez. “ Desiring to clear up the matter, and to solve, as far as I am able, the many doubts which a point so abstract as the *infinite*, and the *infinitely little* occasion to beginners, and to establish at the same time propositions which may serve us for a basis when we treat of the Infinitesimal Calculus ; it is necessary to propose some simple examples, which may facilitate the intelligence of the matter. And let one be the following proportion $8 : 8 : 4 : 4$, which we cannot doubt to be in proportion, and that it will subsist, on dividing and alternating; viz. $8-8 : 8 : : 4-4 : 4$, and $8-8 : 4-4 : : 8 : 4$, or what is the same, $0 : 0 : : 8 : 4$. From which result, one of two things must be inferred, either that the principles established,” in treating on geometrical proportion, “ are false, or as $0=0$ so is $8=4$: an objection, which far from embarrassing us, should supply matter for clearing up so abstract a point. Hence, in so far as” it may be objected “ that $0 : 0 : : 8 : 4$ cannot be proportionals; we cannot admit this without denying the rigorous demonstrations in the treatise of geometrical proportion, which is uncontestible.”

The palpable absurdity in the conclusion $8 : 4 : : 0 : 0$, would logically imply, that there was something sophistical in the process of *deduction*; the *premises* being true $8 : 8 : : 4 : 4$. Nor is this sophism difficult to be detected. On the *principle*, that the *property* of every subject depends on the ex-

istence of the subject itself, it necessarily follows, that the *proportion* between quantities depends on the existence of the quantities themselves. It would consequently appear to a more logical, though perhaps a less mathematical, head, that by any process, whereby two quantities were annihilated in a continual proportion, to which four were necessary, the proportion itself would be destroyed. Where 0 is substituted in the *conclusion*, it consequently assumes a very different signification from what it is ascribed in the *argument*; and means nothing more than that, of the four terms of the proportion, two are absolutely annulled. To be expressed, without an ambiguity, the conclusion should be written $8 : 4 :: \times : \times$, which wants two terms to form a continual proportion; and if written $8 : 4 :: 0 : 0$ it can conclude nothing beyond that of subverting the process of deduction, whereby it is brought out, by a *reductio ad absurdum*. So far, of course, am I from considering it as founded on the incontrovertible principles of geometrical proportion, that I consider them as irreconcilably opposed; those principles requiring four quantities in a continual discrete proportion, while it really possesses no more than two.

Yet on the foundation thus fixed, the author proceeds to raise the superstructure in the same style; “Para vencer semejantes tropiezos,” he continues, “y sacar de ellos alguna doctrina, que en lo sucesivo pueda sernos de la mayor utilidad, debemos considerar que si $8 : 4 :: 0 : 0$, tambien ha de ser $\frac{8}{4} = \frac{0}{0} = 2$; de suerte que $\frac{0}{0}$ puede expresar muy bien la razon de dos cantidades finitas; luego hay cantidades tales que en su comparacion se pueden reducir á la forma $\frac{0}{0}$, y esta expresion puede ser una cantidad real.” That by a process of deduction thus *rigorous*, and a mode of expression thus *definite*, any required conclusion may be deduced from any assumed premises, is a point that may be surely admitted without rigid *demonstration*.

P. 25. l. 17. In the application of the Integral Calculus

to the rectification of curves, it is necessary to consider them, as polygons with an infinite number of sides; that is, as composed of *an infinity of right lines*, which form various angles, so much greater as the curvature is less. While it will not be disputed, (1) that the curve, which is to be rectified is a *finite* quantity; and it appears (2) from the first definitions of geometry, that the elements into which it is divided, as *lines*, must have *length* to distinguish them from *points*; it follows (3) that the curve, in containing an infinity of these *lines*, or *lengths*, must afford an instance of the infinite comprised in the finite. If this be not a paralogism, I am curious to be informed where an example of that figure may be found in dialectics? Yet in the same method, the Integral Calculus proceeds, in its application to the quadrature of superficies, the measure of solids, and of superficies of solids of rotation: in which the finite quantity to be integrated is supposed, by the same method of reasoning, to contain an infinite number of trapeziums, plates, &c.

From these objections, the founders and advocates of this science have frequently acknowledged their inability to defend it. “Cartesius,” observes Leibnitz, “etiam in principiis suis alicubi fateri videtur, quòd impossibile sit respondere difficultatibus circa materiæ divisionem in infinitum, quam nihilominus esse veram agnoscit: Arriaga, alique scholastici eandem ferè sententiam exosculantur.” Tentam. Theod. §. 70. Oper. tom. i. p. 107. To the same effect, Dr. Clarke; “there are many demonstrations even in abstract mathematics themselves, which no man *who understands them* can in the least doubt the certainty of; which yet are attended with difficult consequences, that cannot be perfectly cleared: as, for instance, the infinite divisibility of quantity,” &c. On the Soul, ut supr. p. 849. Cf. Locke, on Hum. Underst. b. ii. ch. 23. §. 31.

Ibid. l. 25. Voy. Laplace Syst. du Monde, liv. v. ch. v. p. 338. sq. Mécan. Célest. liv. xv. tom. v. p. 303. sq.

Ibid. l. 29. In the Integral Calculus few quantities are

found capable of an exact integration. Analysts have been consequently obliged to invent methods, for the purpose of attaining “approximate integrals.” One of the commonest of these methods consists in transforming the quantity into an infinite series, rapidly converging; which contains in all its terms the differential of the variable. As the series is supposed to be continuable to infinity, and the computer is confined to the selection of a limited number of terms, to obtain a polynome to be integrated in the regular way; it is obvious, as *the whole* series expresses the exact value of the quantity sought, the *part* taken can give but an *approximation* to it. Suitably to this property, the instrument thus employed was termed by Wallis; who observes of it; “quam
“ ego voco *Continuam Approximationem*, alii *Seriem Con-*
“ *vergentem*, alii *Seriem Infinitam*.” Epist. ad Leibnitz. Oper. tom. iii. p. 101.

P. 26. l. 1, 5. These expressions must be, of course, taken relatively, and understood with reference to the difficulties, of which a solution has been sought in the Infinitesimal Calculus.

P. 27. l. 14. The assent which the mind gives to any thing incomprehensible, we term *faith*; which finds its exercise in subjects of Philosophy as well as Religion. “Mysteria,” observes Leibnitz, “explicari possunt, quantum ad
“ *credenda* ea satis est, at *comprehendi* non possunt, nec *intelligi* quo pacto existant. Sic in *Physicâ* quoque, usque
“ ad certos quosdam cancellos, complures qualitates sensiles
“ imperfectè quidem explicamus, sed eas *minimè comprehendimus*. Neque verò mysteria probare ratione possumus,
“ quicquid enim à priori, sive ratione purâ probari potest,
“ potest et comprehendì.” Tent. Theod. Diss. de Conform. Fid. cum Ration. §. 5. tom. i. p. 67. And again to the same effect: “*Incomprehensibilitas* quidem non obstat, quominùs
“ *veritatibus* etiam *naturalibus* adsentiamur; verbi gratiâ,
“ (uti jam adnotavi), nos odorum saporumque naturam non
“ *comprehendimus*, et tamen testimonio, *fidei simili*, testimonio sensuum nixi, *credimus*, qualitates istas sensiles in rerum

“naturâ fundatas, nec mera phantasiæ ludibria esse.” Ibid. §. 41. p. 91.

These observations admit of an indefinite extension not only to the phenomena, but to the laws of nature; as they are applicable to organised and inorganised matter, to body and mind, and to the influence and dependance which they exert on each other. In the sciences, whether physical or metaphysical, which profess to investigate those laws and phenomena; the causes on which they depend,—as well the primary from which they proceed, and the final for which they are designed, as the secondary by which they are produced,—abound in mysteries beyond our comprehension. Nor is there a difficulty with which such subjects are embarrassed in Theology, with which they may not be shewn to be encumbered in Philosophy. “Eodem modo se habent,” observes Leibnitz, in treating on the conformity of Reason and Faith, “mysteria reliqua, in quibus ingenia moderata semper explicationem invenient, quæ ad credendum satis sit ad comprehendendum parùm; sufficit nobis aliquatenus scire, *quid est?* (τί ἐστι) sed *quomodo* (πῶς) neque scimus, neque nobis est scitu necessarium. Ac de Mysteriorum explicationibus, passim tradi solitis, dici potest id, quod Sueciæ Regina in numismate quodam efferebat de coronâ, quam deposuerat. Non mi bisogna, e non mi basta.

“Nihilomagis necesse nobis est, (uti jam notavi) Mysteria probari à priori, vel eorum rationem reddi; sufficit nobis, rem ita esse (τὸ ὅτι) quamvis ignoremus *quare* (τὸ διότι) quod Deus sibi reservavit. Elegantes et celebres sunt Josephi Scaligeri hac de re versiculi. Ne curiosus quære causas omnium, &c.” Ibid. §. 56. p. 98. b.

With respect to the abstract mathematics, which lay claim to a higher and demonstrative certainty, it scarcely admits of dispute that their first principles must be still ranked among the mysteries of science. Did not the reasonings of those who affect to explain them place it beyond a doubt, their admissions would render it palpable, that, if at all compre-

hensible, they are not as yet comprehended. Every effort at illustrating them, ends in presenting us with a description of terms, that if they express any thing positive, imply some direct contradiction. “Pariter negotium facessunt,” observes Leibnitz, while engaged in such an attempt, “*series numerorum*, in infinitum procedentes. Concipitur in illis *terminus ultimus*, numerus infinitus, vel infinitè parvus, sed omnia hæc nihil aliud sunt, quàm *fictiones*. Numerus omnis finitus est et adsignabilis, omnis linea similiter se habet ratione, et infinita, aut infinitè parva, nihil aliud significant, quàm magnitudines, quæ tam magnæ aut tam parvæ sumi queunt, quàm libuerit, ut nimirum ostendatur, errorem esse minorem quolibet dato, hoc est, errorem revera nullum esse: vel saltem per infinitè parvum intelligitur status quantitatis evanescentis vel nascentis, ad instar magnitudinum jam formatarum conceptus.” Ibid. §. 70. p. 107. In the designation of the quantities which are thus described as fictitious and real, as something and nothing, the same indistinctness and contradiction prevails. “Est utique meum a ,” observes Wallis, in charging Leibnitz with having appropriated his discovery of the Differential Calculus, for which a subsequent claim has been preferred for Newton, “*tantundem* ac tuum x seu y abscissæ segmentum; cum hoc solo discrimine, quòd tuum x est *infinitè parvum*, meum a *planè nihil*. . . . Quòd autem mea mihi videatur designatio simplicior, ponentis $a=0$, quàm tua ponentis x infinitè parvum; hinc est; nempe quòd mihi non opus sit tuis aliquot postulatis, de infinitè-parvo in se ducto, aut in aliud infinitè-parvum, in nihilum degenerante, (quod nonnisi cum aliquâ cautione adhibendum est;) cum sit per se perspicuum (quod mihi sufficit) quòd, Nihili quodcumque multipulum, est adhuc nihil.” Wallis, Epist. ad Leibn. ut supr. p. 124.

It is thus little surprising that Newton has expressed himself as little satisfied with the Differential Method of Leibnitz, whom he accuses of correcting one error by another; as Berkley with the Fluxional Method of Newton,

whom he charges with not having founded it on principles strictly logical and conclusive.

P. 28. l. 15. See Boyle Disc. on the distinc. of things above and contr. to Reason. Works, vol. v. p. 49. sq. Butler's Analogy of Nat. and Rev. Relig. par. ii. chap. ii. §. 2. p. 172.

Ibid. l. 22. Whiston, New Theor. postul. 3. p. 1. comp. Burnet, Theor. par. i. ch. i. p. 5. sq. Butler, Analog. par. i. ch. vi. p. 121.

Ibid. l. 27. Vid. Lang. de Ann. Christ. p. 255. Whiston, New. Theor. b. ii. hyp. xi. p. 201. b. iii. ch. iv. p. 254. It appears however, that Whiston's interpretation of the testimony of the Chaldees, Egyptians, and Hebrews, on the date of the Deluge is erroneous. It may be shewn, on the contrary, from their modes of computation, that they coincide in representing December 3rd as the day on which the ark was entered by Noah, Osiris and Xisuthrus.

P. 29. l. 13. See Butler's Analog. of Nat. and Rev. Relig. par. ii. ch. vii. p. 277.

P. 31. l. 8. Leibnitz, Diss. de Conform. Fid. cum Rat. §. 1. p. 64. "Ordior a Quæstione præliminari de Conformatate Fidei cum Ratione, ac de usu Philosophiæ in Theologiâ, cùm quòd ea magnam sibi partem vindicat in præcipuo, quod adgredimur, argumento, tum quòd Bælius totus in ea occupatur. Pro certo adsumo, duas veritates sibi mutuò contradicere non posse; materiam, in qua Fides versetur, esse veritatem, à Deo modo extraordinario revelatam, et Rationem esse catenam veritatum, sed speciatim, (si eam cum Fide comparaveris,) earum quas humana mens, nullis adjuta Fidei luminibus, nativâ vi suâ adsequi potest." Cf. Herschel. Intr. to Nat. Phil. §. 6. p. 9.

P. 34. l. 22. Herschel. ibid. §. 60. p. 66.

P. 36. l. 28. The doctrine of perfectibility, which was first suggested by M. Turgot, was advocated by M. Condorcet, in his Outl. of Hist. View of the Progr. of Hum. Mind. To avoid the imputation of an undue accommodation

of his opinions to my particular purposes, I shall give the substance of his work, as extracted by Dr. Miller in his *Philos. of History*, *Introduct.* p. xxv. “Condorcet,” he observes, “reduced his speculations to three objects; the destruction of inequality between different nations, the progress of equality in one and the same nation, and the intrinsic improvement of individual men. In respect to each of these he contended *that nature had fixed no limit to our advances*. In regard to the third and last of them he contended, that the *mass of knowledge would be indefinitely enlarged, and even the facility of acquiring it increased*. Man, he thought susceptible of physical and moral perfectibility, and though he has not asserted the possibility of his attaining immortality, he presumed the duration of human life would be extended beyond any assignable limits.”

P. 39. l. 2. Vid. Brucker. *Hist. Phil.* vol. ii. p. 958. sq.

Ibid. l. 9. Id. *ibid.* vol. i. p. 252. sq. Cf. vol. ii. p. 932. n. Abel-Remusat. *Nouv. Mélang. Asiat.* tom. ii. p. 385.

P. 40. l. 10. Vid. Newton. *Princip. schol. gen.* ad fin.

P. 41. l. 7. Vid. Euseb. *Præp. Evan.* lib. vii. cap. ix. p. 313. d.

LECTURE II.

P. 44. l. 8. See Derham. *Astro-theolog.* *Introduct.* p. xx.

P. 45. l. 26. Id. *ibid.* p. xxi.

P. 46. l. 27. Leibnitz, *Epist. ad P. Des Boss.* *Oper.* tom. ii. p. 266. “Violentum admitto utique, neque à communi sermone recedendum puto, qui ad apparentia refertur; eo ferè modo quo Copernicani de motu solis loquuntur cum vulgo. Simili modo loquimur de casu et fortunâ.” *Comp.* Derham. *ut supr.* p. xxi.

P. 47. l. 3. Laplace *Système. du Mond.* liv. ii. chap. iii. p. 101. “Maintenant, supposons-nous *le soleil* accompagné des planètes et des satellites, *en mouvement* autour de la terre; ou ferons-nous mouvoir *la terre*, ainsi

“ que les planètes, autour du soleil? Les apparences des
 “ mouvemens célestes *sont les mêmes dans ces deux hypo-*
 “ *thèses*; mais la seconde doit être préférée par les consi-
 “ dérations suivantes.” Id. ibid. ch. iv. p. 108. “ Ainsi, les
 “ saisons et les jours sont les mêmes dans l’hypothèse *du*
 “ *repos du soleil*, et dans celle de *son mouvement autour de*
 “ *la terre*; et l’explication des saisons que nous avons
 “ donnée dans le livre précédent, s’applique également à la
 “ première hypothèse.”

P. 49. l. 8. Id. ibid. liv. v. chap. ii. p. 295. “ De l’école
 “ Ionienne sortit le chef d’une école beaucoup plus célèbre.
 “ Pythagore né à Samos, vers l’an 590 avant l’ère Chréti-
 “ enne, fut d’abord disciple de Thalès. Le philosophe lui con-
 “ seille *de voyager en Egypte*, où il se fit initier aux mys-
 “ tères des prêtres, pour *s’instruire à fond de leur doctrine*.
 “ . . . Toutes les vérités astronomiques de l’école Ioni-
 “ enne furent enseignées avec plus de développement dans
 “ celle de Pythagore; mais ce qui la distingue principale-
 “ ment *est la connoissance des deux mouvemens de la terre*,
 “ sur elle-même et *autour du soleil*. Pythagore prit soin de
 “ la cacher au vulgaire, à *l’imitation des prêtres Egyptiens*
 “ auxquels il en étoit, probablement, redevable: elle fut
 “ exposée dans un grand jour par son disciple Philolaus.”
 Conf. Plut. Vit. Num. tom. i. p. 123. Placit. Phil. lib. iii.
 cap. xiii. Diog. Laert. lib. viii. p. 234. d. Burnet. Archæol.
 cap. viii. p. 104. b. 106. d. cap. xi. p. 207. b. 210. a. Sca-
 lig. Emend. Temp. lib. v. p. 268. d. sq. Brucker. Hist.
 Philos. tom. i. p. 1062.

Ibid. l. 22. Vid. Act. vii. 22. Joseph. Antiq. lib. ii. cap.
 v. p. 57. e. Id. contr. Apion. lib. i. p. 1053. a. 1055. c. 1056.
 d. 1057. b. Euseb. Præp. Evang. lib. ix. cap. xxvii—xxix.
 p. 431. sq. conf. Diodor. Sic. Hist. lib. i. p. 86. al. 60. c.
 d. It appears from the light, which the decyphering of the
 hieroglyphics has thrown on the Egyptian Chronology, that
 the princess under whose care Moses was educated, was
 Amenset, the same who is called by Manetho Amenses.
 She succeeded to the throne, when Moses was twelve years

of age, B. C. 1560. J. P. 3154. and retained it until he was thirty-four. Under her patronage, he must have consequently possessed unlimited access to the stores of Egyptian science. Among the traditions, preserved of his learning among the natives, some particularly attest his proficiency in astronomy: vid. Apion. ap. Joseph. *ibid.* lib. ii. p. 1061. a.

P. 50. l. 12. Joseph. *Antiq.* lib. iii. cap. v. p. 81. f. cap. ix. p. 86. f. Philo. *Jud. de Vit. Mos.* p. 667. d. Kimchi in Ps. xix. 8. Clem. Alexandr. *Strom.* v. p. 410. a. S. Hier. de Sacerd. *Vest.* tom. iii. p. 366. c. Outram de Sacrif. lib. i. cap. ii. p. 21, 22. De Dieu in *Act.* vii. 43. p. 72.

Ibid. l. 15. Joseph. *ibid.* p. 81. g. comp. S. Hier. de *Vest. Sacerd. Oper.* tom. iii. p. 366. Pearson on the Creed, vol. i. p. 80. d. cf. *infr.* n. on p. 59. l. 30.

Ibid. l. 28. Josephus while he distinguishes the sun from the planets, describes the golden candlestick as intended to represent those heavenly bodies. *Antiq. Jud.* lib. iii. cap. vii. p. 83. f. ποιήσαντος αὐτὴν [τὴν λυχνίαν] συγκειμένην εἰς μοίρας εἰς ὅσας τοὺς πλανήτας καὶ τὸν ἥλιον κατανέμουν, ἀπαρτίζεται δὲ εἰς ἑπτὰ κεφαλὰς, κατ' ἀλλήλας ἐν στοίχῳ διακειμένας· λύχνοι δ' ἐπιφέροντας αὐταῖς ἑπτὰ κατὰ μίαν, τῶν πλανήτων τὸν ἀριθμὸν μιμούμενοι. By Philo and Clement, both of whom were Egyptians, and the former also a Jew, it is expressly stated, that the sun occupied the centre; Philo. *Jud. Vit. Mos.* p. 669. c. ὅθεν ἐξ μὲν κλάδοι, τρεῖς δ' ἐκατέρωθεν τῆς μέσης λυχνίας, ἐκπεφύκασιν εἰς ἀριθμὸν ἑβδομον· ἐπὶ δὲ πάντων, λαμπάδιά τε καὶ λύχνοι ἑπτὰ, σύμβολα τῶν λεγομένων παρὰ τοῖς φυσικοῖς ἀνδράσι πλανήτων. Ὁ γὰρ ἥλιος, ὥσπερ ἡ λυχνία, μέσος τῶν ἐξ τεταγμένος, ἐν τετάρτῃ χῶρᾳ φωσφόρει τοῖς ὑπεράνω τρισὶ, καὶ τοῖς ὑφ' αὐτὸν ἴσοις· ἀρμοζόμενος τὸ μουσικὸν καὶ θεῖον ὡς ἀληθῶς ὄργανον. And to the same purpose; Clem. Alex. *Strom.* v. p. 410. e. τρεῖς γὰρ ἐκατέρωθεν τῆς λυχνίας ἐμπεφύκασιν κλάδοι, καὶ ἐπ' αὐτοῖς οἱ λύχνοι· ἐπεὶ καὶ ὁ ἥλιος, ὥσπερ ἡ λυχνία, μέσος τῶν ἄλλων πλανήτων τεταγμένος, τοῖς τε ὑπὲρ αὐτὸν, τοῖς τε ὑφ' αὐτὸν, κατὰ τινα θείαν μουσικὴν, ἐνδίδωσι τοῦ φωτός. With the form of this sacred utensil, none of these writers can be sup-

posed to have been unacquainted. By Josephus, as of the priestly order, it must have been seen in the temple; from whence it was taken, it is supposed at his suggestion, and placed in the temple of Peace erected by Vespasian at Rome, and enriched with the other spoils of the Jewish temple. A representation of it not long subsequently was placed on the Arch of Titus; from whence the figure of it has been copied, as inserted in the collections of Antiquities: vid. Montfauc. *Antiq. Expliq.* tom. iv. pl. c. p. 162.

P. 51. l. 7. The construction of the first temples erected to Vesta at Rome, and the opinions held by those who built them, respecting the system of the universe, reflect light upon each other. Plutarch observes of Numa, that he formed those buildings round, not in imitation of the earth, but of the universe; and placed the sacred fire in the centre of them, according to the notion of the Pythagoreans: *Vita Num.* tom. i. p. 123. *Νουμᾶς δὲ λέγεται καὶ τὸ τῆς Ἑστίας ἱερὸν ἐγκύκλιον περιβαλέσθαι, τῷ ἀσβέστῳ πυρὶ φρουρὰν, ἀπομιμούμενος, οὐ τὸ σχῆμα τῆς γῆς, ὥς Ἑστίας οὔσης, ἀλλὰ τοῦ σύμπαντος κόσμου, οὗ μέσον οἱ Πυθαγορικοὶ τὸ πῦρ ἰδρύσασθαι νομίζουσι, καὶ τοῦτο Ἑστίαν καλοῦσι καὶ μονάδα. Τὴν δὲ γῆν οὔτε ἀκίνητον, οὔτε ἐν μέσῳ τῆς περιφορᾶς οὔσαν, ἀλλὰ κύκλῳ περὶ τὸ πῦρ αἰωρουμένην, οὔτε τῶν τιμιωτάτων, οὔδὲ τῶν πρώτων τοῦ κόσμου ὑπάρχειν. Ταῦτα δὲ καὶ Πλάτωνά φασι, πρεσβύτην γενόμενον, διανενοῆσθαι περὶ τῆς γῆς, καὶ ἔ.* The difference of opinion expressed on this subject is resolvable into the esoteric, as opposed to the exoteric views, in which the same doctrine was occasionally regarded. Vid. Brucker. *Hist. Phil.* tom. i. p. 1062. The former view was first divulged by Philolaus: the latter having been generally disseminated among the vulgar: vid. Diog. Laërt. lib. viii. p. 235. a. Plut. de Placit. lib. iii. cap. xiii. p. 896. a. al. p. 609. Burnet's *Archæol.* cap. viii. p. 106. d. As the temples of Vesta were of the highest antiquity at Rome; of equal antiquity must have been the doctrine: vid. Dionys. Halicarn. *Antiq. Rom.* lib. i. p. 56. g.

P. 52. l. 14. Gen. i. 1.

P. 52. l. 19. Exod. xx. 11.

P. 53. l. 4. Vid. Bochart. Hieroz. lib. ii. cap. xxxiv. col. 345, 19.

Ibid. l. 9. Vid. Brucker. Hist. Phil. tom. i. p. 287. d. 288. cf. p. 132. b. 133. d. tom. ii. p. 651. b. d.

Ibid. l. 26. Id. ibid. From the worship of Apis, the Pantheism of the Egyptians may be inferred; the worship of the bull having originated from the deification of every object of nature.

Ibid. l. 30. Vid. Spencer. de Leg. Hebr. lib. ii. cap. ii. §. 2.

P. 56. l. 23. Of the licences taken by astronomers, in substituting the apparent phenomena for the real, a single example may be laid before the reader. In the work from which it is taken, the celebrated author follows the obvious and popular view, in the discussion of the first and principal part of his subject. “De tous les astres qui nous paroissent *avoir des mouvemens* particuliers, le plus remarquable *est le soleil*. Son *mouvement propre*, dirigé en sens contraire du mouvement diurne, ou d’occident en orient, *se reconnoit facilement* par le spectacle du ciel pendant les nuits, spectacle qui change et se renouvelle avec les saisons. Les étoiles situées sur la route du soleil, et qui se couchent un peu après lui, se perdent bientôt dans sa lumière, et reparoissent ensuite, avant son lever; *le soleil s’avance* donc vers elles en sens contraire de son *mouvement diurne*.” Laplace, Systèm. du Monde, liv. i. ch. ii. p. 5. d.

P. 58. l. 22. Gen. i. 1.

P. 59. l. 4. Gen. ii. 4.

Ibid. l. 14. Exod. xx. 8, 11.

Ibid. l. 18. See Pearson on Creed, vol. ii. p. 57. n. (p.)

Ibid. l. 30. The Hebrews divide the universe into three worlds; the lowest they considered the earth, and the highest the heaven of heavens. Of the second, the following account is given by the learned in Jewish antiquities. Buxtorf. Lex. Rab. col. 1620. “Mundus *Medius* continet הגלגלים *sphaeras*, *stellas*, *signa cœlestia*, et *regionem* *aëream*.” To the same purpose, Pearson on Creed, vol.

ii. p. 57. n. (p) “The second (world) is called עולם התיכון the middle or the inmost world; הוא עולם הגלגלים this is *the world of the spheres*, containing the aerial region and *starry heavens*.” In explanation of the particular term by which this region is distinguished, Buxtorf observes, *ibid.* col. 438. “Apud Astronomos, *septem orbis planetarum* appellantur גלגלים, *galgalim*.” And the seven planetary spheres are thus identified by the Rabbins; Jalkut. Ruben. fol. 3. 2. “R. Sira . . . dixit *septem esse cælos*. fol. 4. 1. primum expansum *Saturni*, secundum *Jovis*, &c. septimum *Lunæ*.” Cf. Rosh. Hoshana fol. 32. 1. Pirke Eliezer. 28. The same doctrine, which is described by Macrobius, as a part of the *Ancient Theology*, of which a summary is given in the “*Somnium Scipionis*,” is traced, through Cicero and Plato, to the Egyptians: *vid.* Macrobius in *Somn. Scipion.* lib. i. cap. xix. p. 64. 66.

P. 60. l. 4. In the triple division of the universe, “the highest heavens,” as distinguished from the lowest and middle, are described as follows. Buxtorf. *ut. supr.* col. 1620. “*Mundus supremus* est mundus מלאכים angelorum, et נפשות animarum, עולם הרוחני mundus spiritalis.” To the same purpose observes Pearson, *ut. supr.* “The third is the superior world; this is the world of Angels, of God, of Souls, the spiritual world.” St. Jerome more particularly observes, in allusion to the significance of the Tabernacle, as representing the triple division of the universe: *De Vest. Sacerd.* *ut. supr.* “*Totus Mundus in Tabernaculi describitur sacramento. Primum et secundum vestibulum omnibus patet: aqua enim et terra cunctis mortalibus data sunt. In sanctis verò sanctorum, quasi ad æthera et in cælum, paucorum introitus et volatus est Septem lucernæ septem errantia astra demonstrant.*” In the *Ancient Theology*, as traditionally deduced from the Egyptians, through Plato and Cicero, the distinction is marked even more forcibly; *Somn. Scip.* *ibid.* “Nonne aspicias quæ in templa veneris? novem tibi orbibus, vel potius globis connexa sunt omnia: quorum unus

“ est *cœlestis*, *extimus*, qui reliquos omneis complectitur,
 “ summus ipse deus, arcens et continens cæteros; *in quo*
 “ *infixi sunt illi*, qui volvuntur, *stellarum cursus sempiterni*:
 “ cui subjecti sunt septem, qui versantur retrò, contrario
 “ motu, atque cœlum ex quibus unum globum possidet
 “ illa, quam in terris Saturniam nominant.” Conf. Macro-
 prob. *ibid.* cap. xvii. p. 59. It is justly observed, in the
 comment on this passage; “ Quòd autem hunc istum exti-
 “ mum globum, qui ita volvitur, summum deum vocavit;
 “ non ita accipiendum est, ut Prima Causa, et Deus ille
 “ omnipotentissimus existimetur: cùm globus ipse, quod
 “ cœlum est, animæ sit fabrica; anima ex mente processerit;
 “ mens ex Deo, qui verè summus est, procreata sit.” Ma-
 crob. *ibid.* p. 60. The doctrine is, in fact, delivered in
 the spirit of Pantheism, which was adopted, to the fullest
 extent, by the Egyptians. In the extracts from the Chris-
 tian and Pagan writer, the distinction between the concave
 of the fixed stars, and the planetary orbits, which were in-
 cluded within that of Saturn is explicitly marked. And
 there is but too much reason to believe, that the Jewish
 Cabbala was remodelled on the principles of the Pantheistic
 system, as maintained by the orientalists. Vid. Burnet.
Archæol. cap. vii. p. 87. sq. Brucker. *Hist. Phil.* vol. ii.
 p. 1025. In the external concave, the seat of the blessed
 was supposed to be placed; to which it was conceived the
 soul passed through the planetary system: Vid. Clem. Alex.
Strom. v. p. 437. e. Macro. *ibid.* cap. ix. p. 36.

P. 61. l. 14. It is scarcely necessary to observe, that the
 analogies, noticed in this and the three following pages, are
 deduced from the nebulous hypotheses of Dr. Herschel and
 M. Laplace: succinct views of which may be found in the
Diction. d'Hist. Natur. au mot “Géologie;” and Greenough’s
Crit. Exam. of first Princ. of Geology, p. 172. sq.

P. 62. l. 6. It will be doubtless received with astonish-
 ment, that while Newton pursued, to the utmost extent, the
 physical causes by which the origin of the planetary system
 may be accounted for; he represents them as failing, and finds

it necessary to have recourse to the preternatural, to explain the phenomena, at that point precisely, where Moses represents the divine agency as interposing, upon those days of the Creation which engage our present attention. The sacred historian,—after referring the origin of matter to the act of creation, to which philosophy is compelled to recur, in order to account for its existence—represents “the separation of light from darkness,” as requiring the interposition of the Divinity. In conformity to which, the incomparable philosopher observes; “If *the matter* of the sun and planets was evenly disposed throughout an infinite space, it would never convene into one mass; but some of it would convene into one mass and some into another, so as to make *an infinite number of masses*, scattered at great distances from one to another throughout all the infinite space. And thus might *the sun and the fixed stars be formed*, supposing the matter were of *a lucid nature*. But how the matter should divide itself into *two sorts*; and that part of it which is fit to compose a shining body should fall down into one mass and make *a sun*; and the rest, which is fit to compose an opaque body, should coalesce, not into one great body, like the shining matter, but into *many little ones*: Or if the sun were at first an opaque body like the planets, or the planets lucid bodies like the sun, how he alone should be changed into a shining body, whilst all they continue opaque; or all they be changed into opaque ones, whilst he remains unchanged: *I do not think explicable by mere natural causes*, but am *forced* to ascribe it to *the counsel and contrivance of a voluntary Agent*.” Letter I. to Bentley. Works, vol. iv. p. 430. See note to p. 69. l. 7.

P. 63. l. 4. Voy. Laplace Systém. du Mond. liv. v. ch. vi. p. 345.

P. 65. l. 9. Gen. i. 4, 5.

P. 66. l. 9. See Herschel. Introd. to Nat. Philos. p. 313.

P. 67. l. 27. Under this observation the following remarks may be reduced, though proposed with a different

view by their author. They happily illustrate the *πολυποίκιλος σοφία* of the Divine Being, who can effect the most complex ends by the simplest means; the uniformity of whose laws as imparted to nature are not less indicative of design, than their efficiency is demonstrative of power. “On a vu,” observes M. Laplace, “dans le premier chapitre, avec quelle précision le repos presque absolu des périhélies des orbes planétaires indique la loi de la pesanteur réciproque au quarré des distances; et maintenant que nous connoissons la cause des petits mouvemens de ces périhélies, nous devons regarder cette loi comme étant rigoureuse. Elle est celle de *toutes les émanations qui partent d’un centre*, telle que *la lumière*; il paroît même que toutes les forces, dont l’action se fait appercevoir à des distances sensibles, suivent cette loi: on a reconnu depuis peu, que les attractions et les *répulsions électriques et magnétiques* décroissent en raison du quarré des distances. Une propriété remarquable de cette loi de la nature, est que si les dimensions de tous les corps de cet univers, leurs distances mutuelles et leurs vîtesses, venoient à augmenter ou à diminuer proportionnellement; ils décriroient des courbes entièrement semblables à celles qu’ils décrivent, et leurs apparences seroient exactement les mêmes; car les forces qui les animent, étant le résultat d’attractions proportionnelles aux masses divisées par le quarré des distances, elles augmenteroient ou diminueroient proportionnellement aux dimensions du nouvel univers. On voit au même temps, que cette propriété ne peut appartenir qu’à la loi de la nature.” *Système du Monde*, liv. iv. ch. xv. p. 284.

P. 69. l. 7. It has been already observed, that Newton, from the insufficiency of natural causes, has found it necessary to recur to preternatural, to explain the origin of the planetary system; and that he introduces the divine agency precisely at that point of time, in which the sacred historian represents the Deity as having interposed at the Creation. The observation may be extended to the concurrent opera-

tion, by which “the day” is represented,‡ as having been divided, at the same time, into “morning and evening;” which was effected, as has been observed, by the rotation imparted to the earth upon its axis. To account for this motion, recurrence is had in the same manner to the divine agency, by the incomparable philosopher, whose authority was formerly cited. “In my former” he observes, “I represented, that the *diurnal rotations* of the planets could “not be derived from gravity, but *required a Divine Arm* “*to impress them.* And though gravity might give the “planets a motion of descent towards the sun, either directly or with some little obliquity, yet the transverse motions by which they revolve in their several orbs, *required the Divine Arm to impress them according to the tangents of their orbs.* I would now add, that the hypothesis of “matter’s being at first evenly spread through the heavens, is in my opinion, inconsistent with the hypothesis “of innate gravity, *without a supernatural power* to reconcile them; and therefore *it infers a Deity.* For if there “be innate gravity, it is impossible now for the matter of “the Earth and all the planets and stars to fly up from “them, and become evenly spread throughout all the heavens, without a supernatural power; and certainly that “which can never be hereafter without a supernatural “power, could never be heretofore without the same “power.” Lett. VI. to Bentley. Ibid. p. 441.

P. 70. l. 11. Penn, Comp. View of Mos. and Miner. Geolog. vol. i. p. 234.

P. 71. l. 25. I must profess also, that I am as unable to comprehend the sense of this interpretation which is substituted for the literal meaning of the sacred text; as to perceive its application. See Whiston New Theory, Introd. p. 15. 24. and b. iii. ch. i. p. 217. e. Penn, Comp. Estim. vol. i. p. 229. d. 237. d. For I cannot understand, how the mere revelation of an object can be said to constitute a positive work; much less a work of creative power, which as we are assured, continued to operate until suspended by

the rest of the Sabbath. Gen. ii. 2, 3. By those expositors who inform us,—“*de determinatione astrorum ad certos quosdam usus orbi terrarum præstandos, esse sermonem . . . non de eorum productione;*” and that “the first *optical* existence” of the heavenly luminaries is properly intended; the very object of the sacred historian, in describing the occurrences of “the six days,” previous to their cessation on “the seventh,” seems to be overlooked or forgotten. Of such interpreters, we may surely inquire, in the words of Burnet, “*Quid est quæso, quod Deus creavit isto die?*” Archæol. p. 417. d.

P. 72. l. 21. Vid. Origen. Princip. lib. iv. §. xvi. vol. i. p. 175. a.

P. 73. l. 3. Gen. i. 16—19.

Ibid. l. 14. The legitimacy of this substitution is admitted, by philosophical writers, when they have found it necessary to explain themselves, by referring from the real to the apparent phenomena. Thus it is observed by Boyle, “by miraculous operation, God hath sometimes suspended the laws of nature, and sometimes overruled them upon the account of man; as may appear by Noah’s flood. . . . by the standing still of the sun and moon (or the terrestrial globe) at Joshua’s command,” &c. Disquis. on Fin. Caus. ut supr. p. 529. And to the same purpose, Clarke observes; “Donner un mouvement réglé au Soleil (ou à la terre) c’est une chose que nous appellons naturelle; arrêter ce mouvement pendant un jour, c’est une chose surnaturelle, selon nos idées.” Répliq. II. à Leibnit. ut supr. p. 119.

P. 75. l. 22. The remark which has been made,—on the necessity under which Newton found himself, to recur from natural causes to preternatural, at that point where the divine agency is introduced in the narrative of the Creation,—may be extended from the operations, of the first day to those of the fourth, as I have ventured to explain the latter. “Lastly,” he observes, “I see nothing extraordinary in the inclination of the earth’s axis for proving a Deity; *unless*

“ you will urge it as a contrivance for Summer and Winter,
 “ and for making the earth habitable towards the poles ;
 “ and that *the diurnal rotation of the sun and planets*, as
 “ *they could hardly arise from any cause purely mechanical*,
 “ so by being determined all the same way with *the an-*
 “ *nual and menstrual motions*, they seem to make up that
 “ harmony in the system, which as I explained above, *was*
 “ *the effect of choice*, rather than chance.”

P. 78. l. 14. A. C. 4004. J. P. 710. Octob. 23. feriâ 1.
 Usser. Annal. p. 1.

Ibid. l. 20. Whist. New. Theor. B. ii. hypoth. iv. p. 118.

P. 79. l. 4. Usser. ibid. Scalig. Emend. Temp. lib. v.
 p. 368. c. Calvis. Isagog. Chron. cap. xxxiv. p. 185. Whis-
 ton. ibid. hypoth. vi. p. 123.

Ibid. l. 29. Of this remarkable epoch it is observed by
 Kepler ; “ Annus 4000 ante Christum, modus est ætatis
 “ mundanæ apud plerosque chronographorum hodierno-
 “ rum ; assequiturque situm aliquem planetarum in suis
 “ eccentricis, *consentaneum initio motuum*, nulli aliiper,
 “ plurima sæcula deinceps, comparandum.” Having sub-
 joined the mean places of the planets, and their apogees,
 and exhibited that of the sun as coincident with the vernal
 equinoctial point, he adds ; “ Super hoc situ et dispositione
 “ carcerum, *unde motus omnes prosiliere*, locus esset am-
 “ plissimus philosophandi ; si materia instituta pateretur.”
 Tab. Rudolph. cap. viii. p. 51.

Of the same extraordinary epoch Laplace observes ; “ Une
 “ époque astronomique remarquable est celle où le grand
 “ axe de l’orbe terrestre coïncidoit avec la ligne des équi-
 “ noxes ; car alors l’équinoxe vrai et l’équinoxe moyen é-
 “ toient réunis. Je trouve par les formules précédentes, que
 “ ce phénomène a eu lieu vers l’an 4004 avant l’ère Chré-
 “ tienne, époque où la plupart de nos chronologistes placent
 “ la création du monde, et qui, sous ce point de vue, peut
 “ être considérée comme une époque astronomique.” Mécan.
 Célest. liv. vi. ch. x. tom iii. p. 113.

P. 82. l. 16. It follows from the mechanical principles, on

which the physical astronomy depends, that if a body is urged by two powers of a different kind, it describes a curve called a *trajectory*; the species of which depends on the relation that the two powers bear to each other. Where the powers are equal, the body is projected in the most simple curve, which is a circle. Hence, if we suppose the velocity of a planet exactly accommodated to the power of attraction, its orbit would be perfectly circular.

P. 83. l. 28. See note to p. 78. l. 14. p. 79. l. 29.

P. 84. l. 9. Scalig. Emend. Temp. Prol. p. 7. a. lib. vii. p. 600. Calvis. Isagog. p. 3. b. Seld. de Ann. Civil. Jud. cap. xiii. Whiston. vi. Dissert. p. 305.

Ibid. l. 19. Gen. i. 14, 18, 19.

P. 85. l. 8. The week of the Creation having occurred between Sunday, Oct. 23rd and Saturday the 29th B. C. 4004; it appears from calculation that on Monday, the 24th, the sun was in the equinox, and had the moon conjoined with it. As the crescent becomes visible two days *after* the conjunction; on the *fourth day* of the week, i. e. *Wednesday Oct. 26th.* it marked the commencement of the month and year, by its appearance.

Ibid. l. 16. R. Eliezer ap. Seld. de Jur. Nat. lib. iii. p. 423.

P. 88. l. 4. Vid. Usser. ut supr. Præf. p. i. conf. Petav. Doctr. Temp. lib. ix. cap. ii.

LECTURE III.

P. 91. l. 9. 2 Pet. iii. 5, 6, 7.

P. 93. l. 19. From the accounts received from the priests of Egypt, by Hecatæus, Herodotus, Solon and Plato, it plainly appears, that the doctrine of the destruction of the earth, by fire and water, was maintained in that country: vid. Herod. lib. ii. cap. cxlii. cf. Burnet. Archæol. cap. viii. p. 106. d. Plat. in Timæ. p. 1043. c. 1044. b. Crit. p. 1102. b. ed Ficin. To maintain the pretensions which they advanced to an extravagant antiquity, they however denied,

that their country had suffered in these catastrophes: vid. Herod. *ibid.* cap. cxlii. Plato, *ibid.* p. 1043. d. The soil of Egypt, notwithstanding, retained evidence in its fossil remains, that it had suffered by a deluge: vid. Herod. *ibid.* cap. xii. Plut. de Isid. et Osirid. cap. xl. p. 504. al. p. 367. a.

Ibid. l. 22. The doctrine of the Mundane Restitution was taught in the Mysteries: of the secrets, which they professed to impart, that dogma was obviously a fundamental: comp. Burnet. Archæol. cap. viii. p. 106. d. De Fid. et Offic. cap. v. p. 88. Nothing can be more explicitly stated, than that the first mystagogues imparted their religious systems, of which the Great Restitution was a principal tenet, in the form of mysteries: this is expressly recorded of the original Thoth, who is described, as the founder of the Egyptian and Phenician superstitions: vid. Sanchon. Fragn. ap. Euseb. Præp. Ev. lib. i. cap. x. p. 40. b. 41. b. The same is asserted of Orpheus, to whom the credit is assigned of having transplanted the Mysteries, into Greece from Egypt; Manetho. Fragn. apud eund. lib. ii. cap. i. p. 47. d. By the mystagogue Thoth, the dogma of the Mundane Restitution was inculcated under the hieroglyphic of the serpent, and probably of the phenix: Maneth. ap. Euseb. *ibid.* p. 41. b. d. Horapoll. lib. i. cap. i. lib. ii. cap. lvii.

Ibid. l. 28. See Burnet. Theor. of Earth, b. iii. ch. ii. p. 9. ch. iii. p. 22. sq.

P. 94. l. 3. Burnet. *ibid.* p. 29.

Ibid. l. 10. Id. *ibid.* ch. ii. p. 18. ch. iv. p. 42.

Ibid. l. 15. The phenix has been already noticed, as representing symbolically the Great Restitution, which those periods were supposed to effect in their revolution: see Burnet. *ibid.* chap. iii. p. 23. ch. v. p. 46. Des Vignolles, Chronol. tom. ii. p. 672. 710. It may be collected from an obelisk, which is preserved at Rome, and which appears from an inscription upon it, to have been erected by Rameses, that the dogma expressed by this hieroglyphic was known at Heliopolis, from the earliest period: vid. Am-

mian. Marcel. lib. xvii. cap. iv. As we learn from that inscription, which the Egyptian Hermapion decyphered at the request of Augustus, the monarch so termed merely repaired and beautified the temple, in which the phenix was previously venerated. It is farther observable, as he is frequently confounded with Sesostris; that to him the tradition properly applies, which represented the phenix as having appeared in the reign of this prince, at Heliopolis: vid. Tacit. Annal. lib. vi. cap. xxviii: this tradition having implied nothing more than that the Great Year, which is generally known as the Canicular Cycle, and which commenced J. P. 3389. B. C. 1325. was then instituted. Vid. Des Vignolles, Chronol. tom. ii. p. 672, 683. From the tenor of the Egyptian Chronology, as founded on “an Ancient Chronicle” of that people, accommodated to their great Lunisolar period, and confirmed by a Calendar discovered by Champollion in the palace erected by Rameses at Thebes; it appears, that this prince came to the throne J. P. 3338. B. C. 1376. It is thus highly probable, that the epoch of the Canicular Period, as coinciding with the fiftieth year of his reign, was fixed from the commemoration of the jubilee of his accession. From the inscription on the obelisk of Rameses, it appears that the superstition respecting the phenix preceded the reign of that prince; the doctrine of the Mundane Restitution, of which it was the hieroglyphic was referred to the age of Thoth, who long preceded his times.

Ibid. l. 23. Application was made, by Ptolemy Philadelphus to Manetho, on the subject of the destiny which awaited the world, in these catastrophes. That learned priest who was profoundly versed in the antiquities of his native country, professed to derive his information respecting it, from the hieroglyphic remains of the first Thoth; which the son of the second Thoth had interpreted, and translated into the vernacular language: vid. Syncel. Chron. p. 40. b. c. On taking the date of the doctrine from the age of the second Thoth, it appears to have long preceded

the times of Moses. According to the scheme of Syncellus's Chronology, reduced to years of the Julian Period, the second Thoth flourished J. P. 3113. B. C. 1601: but, from the continued tenor of the Egyptian Chronology, as established by the great Lunisolar Cycle, already noticed, it appears that he should be referred to J. P. 3003. B. C. 1711. The elder Thoth, with whom the doctrine originated, who was the inventor of the Egyptian Calendar, and who gave his name to the first day and month of the Egyptian Year, must be referred to a period of greater antiquity. Vid. Marsham. Can. Chronic. p. 235. The younger must have preceded Moses by nearly two centuries, and if the preceding view of the Egyptian Chronology be allowed, must have been contemporary with Joseph.

P. 96. l. 6. See Burnet. ut supr. b. iii. ch. iii. p. 28. sq. The account of the pillars of Seth, and of the prophecy, respecting the destruction of the world by fire and water, appears to be discredited by Dr. Burnet, in consequence of its not receiving confirmation, from any testimony of antiquity, sacred or profane. We have authority however, for concluding, that those ancient pillars to which the tradition refers, were identical with the monuments which furnished Manetho with the information which he imparted on these subjects to Ptolemy: vid. Syncel. p. 40. b. Marsham, Chron. p. 39. a. Anc. Univ. Hist. vol. i. p. 244. n. The supposition that they were the same, derives no slight confirmation from the consideration that the Siridic land, in which the pillars were said to be placed, and which is improperly confounded by Dr. Burnet with Syria, was really Egypt; so called from Siris, the name of the Nile. vid. Weidler. Hist. Astron. cap. ii. §. 1. Cf. Jablonsk. annot. in Eratosth. Cat. Reg. Theb. §. 37. The date of the prediction ascribed to Adam or Seth, is implicitly preserved by Syncellus, from "the Lesser Genesis," or some apocryphal work; and it furnishes additional evidence in support of the same conclusion. Syncel. ib. p. 10. As determined with reference to the age of Adam, it was delivered A. M. 271.

which corresponds with J. P. 981. B. C. 3733. What adds greater importance to this date is the curious fact, that it forms a common epoch, from which the different Cycles, used by the ancients to compute the time of the Great Mundane Restitution, may be regularly deduced. Whatever be the causes to which a consequence so extraordinary may be ultimately traced; it is obvious, that such would be the natural result, had the date of the prophecy been preserved, and the cycles, that professed to determine the time of its accomplishment, been computed from it, as a known epoch. The accuracy with which the memory of other dates of equal antiquity has been preserved, by means of those cycles, renders this last supposition by no means improbable.

P. 97. l. 23. 2. Pet. iii. 4. The phrase, *ibid.* 5. καὶ γῆ ἐξ ὕδατος καὶ δι' ὕδατος συνεστῶσα, I am prepared to grant, may be understood, according to the notion of Burnet, of the *constitution*, instead of the *situation* of the earth; and may be accordingly rendered, “and the earth, composed “from water and by means of water.” But, in the opinion of the most learned commentators, the sense which is expressed in our vernacular version is entitled to the preference. See Wolf. Cur. Philol. in loc.

P. 99. l. 16. Humboldt. Geogn. Ess. on the Superpos. of Rocks, p. 382. This single testimony, it will not be disputed, is entitled on the ground of the personal experience and veracity of its author, to equal credit with any authority by which it may be opposed. It contains a sufficient refutation of the objections of those, who dispute, on the experience of Linnæus and others, that the earth exhibits any evidence of a general deluge, as distinct from partial inundations.

Ibid. l. 21. Humboldt. *ibid.* p. 23.

P. 100. l. 5. See Greenough's Crit. Exam. of the First Princ. of Geolog. p. 281. sq. If the admirers of this new sect in Philosophy are not besotted in their idolatry, the perusal of a few pages, in continuation from this reference,

will be sufficient to cure them of their devotion. From a small part of the evidence, which is there accumulated, this inference atleast is irresistible, that the promoters of this novel science have not fallen behind the ablest of their predecessors of that most ancient sect, whose immemorial prerogative it has been *vendere fumos*; and that in the convenient talent of supplying, for the narrowness of *fact*, an undaunted hardihood and breadth of *assertion*, they stand without rivals in the annals of Science. After the visions which they have unfolded to us, of the fate of former worlds in successive creations; they will not pronounce that prescience presumptuous in which we venture to predict, that their future efforts will not be unworthy of their former essays: should we even pronounce, from the sketches which have appeared,

. . . . isti tabulæ fore librum
 Persimilem, cujus, velut ægri somnia, vanæ
 Fingentur species.

P. 101. l. 3. De Luc, ut supr. p. 95. sq. Whiston, ut supr. b. ii. hyp. 3. p. 87.

Ibid. l. 23. To refute this groundless notion, little philological skill is necessary, beyond that which is adequate to the intelligence of our vernacular version, and the common principles of grammar. The idiom, by which the term *days* is put for *years*, is common to every language: but, for the simple reason, that a year consists of a *number* of days, it is confined, in the Hebrew, as much as the English, to the *plural*. In the phrase, “The *days* of my pilgrimage are a hundred and thirty *years*.” Gen. xlvii. 9, which is literally rendered, no license of speech is employed in our version; in the original, however, no phrase occurs which is essentially different. Now it unfortunately happens, that in the narrative of the Creation, the term is not merely used in the *singular*, but that it is explained by reference to the component parts of a natural day, as distinguished from a year; “the *evening* and the *morning* were the first *day*.” Gen. i. 5. Nor can the views of Whiston

be urged, in subversion of this conclusion; who supposed, that the day and year were the same; as the diurnal revolution of the earth had not commenced at the Creation. Independent of this notion being mere hypothesis; what he thus confounds, the Scripture clearly distinguishes, in declaring, that “the lights in the firmament” should “be for signs, and for seasons, and for *days*, and *years*.” Gen. i. 14. Were not this distinction of the terms incompatible with the substitution employed by the geologists; they would prove irreconcilable with the account of the institution of the Sabbath, by the bare inspection of which the question appears to be decided; vid. *supr.* p. 59. l. 5.

P. 102. l. 2. See Whiston *New Theor.* Introd. p. 4. Penn Com. Estim. ut *supr.* p. ii. ch. iii. vol. i. p. 166. sq.

Ibid. l. 12. Gen. i. 1, 2.

Ibid. l. 26. *Ibid.* l. 1.

P. 103. l. 1. *Ibid.* ii. 4.

P. 104. l. 24. Cuvier, *Essay on Theor. of Earth*, §. 23. p. 55. tr.

Ibid. l. 28. Humboldt, *Superpos. of Rocks*, p. 53. c. comp. p. 51. sq. It is but justice to acknowledge, that the course by which this conclusion was reached, and this confession extorted, had been pointed out to this writer by the present able President of the Geological Society; who had not only asserted, but proved, the insufficiency of the criteria proposed in the species and genera of fossils, for determining the relative age of formations; see Greenough's *Crit. Exam.* ut *supr.* p. 287—292.

P. 105. l. 12. Humboldt, ut *supr.* p. 54. “Geognosy is not confined to the research for diagnostic characters; it comprehends the whole of those relations in which we may consider every formation: 1st, its position; 2dly, oryctognostic constitution (that is its chemical composition, and the particular mode of aggregation more or less crystalline of its molecules); 3dly, the association of different organized bodies that are found imbedded in it.”

P. 106. l. 14. It can be scarcely necessary to explain,

that the word *creation*, as here used, is taken in the highest sense of making out of nothing, as opposed to transmuting matter already made. The term is applied, in the latter extended sense, to the operations of the six days from which God ceased on the Sabbath. In these days, as Bacon has justly determined after the inspired text, the matter which had been instantaneously “created in the beginning,” was formed into the various objects of the animal, vegetable, and mineral kingdoms. The Rabbins have also rightly distinguished these operations of the Deity, in terming the one *בריאה*, *creation*, and the other *עשייה*, *formation*; of which the former, as inscrutable, or indeed incomprehensible, can be no subject of investigation or discussion. See Locke on Hum. Understand. b. iv. ch. x. §. 19. How far the latter admits of being investigated and discussed, I have elsewhere fully delivered my sentiments: vid. supr. p. 11. sq. comp. note to p. 130. l. 15.

P. 107. l. 13. To this criterion, the decision of the question is reduced, by one of the highest living authorities in the science; and he gives that sentence in reply to it, for which I have ventured to offer my reasons; “If the genera “and species of fossils,” observes Mr. Greenough, “do not “furnish us with the means of determining the relative age “of rocks, it may be supposed, that the *existence*, or non- “*existence* of *fossils*, proves these rocks to have been seve- “rally formed at an earlier or later period than that in “which organic beings were formed. The *grand division* “of rocks into *primary and secondary* is founded *chiefly* “upon this distinction.” Crit. Exam. ut supr. p. 292. “A “very slight acquaintance with nature,” he however sub- joins, “is sufficient to convince us, that the presence or ab- “sence of fossils in a rock depends *less* on the period of its “deposition *than on the nature of its materials*. In the “older formations calcareous beds often contain fossils, “while the argillaceous are destitute of them. In York- “shire and Cumberland, the limestone abounds in fossil “shells; but the hazels, plates, and toadstones, seldom if

“ ever contain them. Some writers have supposed, that
 “ *crystallization is unfavourable* to the existence or rather
 “ *the preservation of organic matter*, and others have
 “ doubted whether the presence of organic matter be not
 “ *fatal to crystallization.*” Id. *ibid.* p. 293.

I would submit, whether the latter opinion does not derive confirmation from the nature of *crystallization*, as depending on the polarity of the particles of bodies; and the former derive illustration from the effect of *mineralization*, as observed in different kinds of wood. Before the molecules, in the former case, can assume a crystallized form, they must be capable of moving freely in a fluid state; that the attraction and repulsion in the poles of their particles may not be impeded in operating upon those of other particles: the intervention and decomposition of animal matter must surely impede this process, which is so delicate, that it is often known to be prevented by the influence of light. In the latter case, a perceptible difference is observed in the texture of the body that has undergone petrification, which is generally proportional to the crystalline polarity of the agent by which it is effected. In agatized or silicious wood, the organic structure of the body is accordingly very perfectly preserved; while in pyritous, on account of the strong polarity of the agent, it is nearly destroyed.

The degree of affinity between the organic matter and the stratum in which it is imbedded must, on the other hand, have conduced to the preservation of the former in a fossil state, or to its total decomposition. The preservation of the *skeletons* merely of animals, and frequently of no more than *a few bones* even of these, sufficiently proves, that even in those beds which were not unfavourable to their preservation, some principle of destruction must have been actively at work. “How rarely,” observes the able writer just quoted, “where bones are found in the best preservation, do we find enough of them to form a complete skeleton! Is it to be supposed, that the animals of which these constituted a part were *monstra per defectum*? Is

“ it not probable, that chalk which contains so many teeth
 “ and palates of fish, contains also animals to which these
 “ teeth and palates belonged ?—and if so, that organic mat-
 “ ter exists in many situations, in which its existence has
 “ not been observed or suspected ?” Id. *ibid.* p. 294.

P. 108. l. 23. As one of the least censurable of such licences, in the method of reasoning, by which “ a succession
 “ of creations and destructions” has been undertaken to be proved, the following passage may be cited, from a geologist of the highest celebrity. “ The remains of oviparous
 “ quadrupeds,” observes M. Humboldt, speaking of the Jura formation, “ fish, and tortoises are found in almost all
 “ the beds, in the *most recent* (Purbeck stone) as well as in
 “ the *most ancient* (lias); the latter however contain the
 “ most, and it appears that they have only the ichthyo-
 “ saurus, and the plesiosaurus, which is an analogous animal, and not the real crocodile. This difference in the
 “ distribution of reptiles has been also observed by M. Prevost on the western coast of France.” *Superpos. of Rocks*, p. 367. The conclusion, that the species thus missing, if not yet *undiscovered*, were at most *extinct*, would appear to be the only inference which the premises would warrant; but whether they disappeared in the present world or an antecedent, would seem, atleast to a mind not gifted with geological prescience, to be placed wholly beyond the reach of conjecture. As our acquaintance with the natural history of the earth, for the ages that it has existed, and through the inexplorable tracts into which it extends, is reducible within very narrow limits both of space and time; common sense would seem to direct us, in the choice which was left us between these worlds, to seek for any unknown or extinct species, rather in that of which we had positive knowledge, than in those, respecting the existence of which we could form but an improbable guess. And as the objects of our search were confessedly natives of an element, to which our inquiries did not and could not extend; the result to which the exercise, not less than the limitation, of

our experience must ultimately lead us, would seem to deprive us of any further election in the object of our research: but would bring us irresistibly and exclusively to the conviction, that, however it might elude our consciousness, it would not escape the observation of others, that the habitation of those lost animals was as little likely to be found in our visions of other worlds as in our nightly or daily dreams.

Let us, however, appeal on this subject to the opinion of an indifferent umpire. Of extinct species in general, and of the crocodile family in particular, a naturalist who was misled by no geological prepossessions, has made the following observation, which every one's experience will enable him to verify to a certain extent. "In all the cultivated and populous parts of the world, the great animals are entirely banished, or rarely seen. The appearance of such raises at once a whole country up in arms to oppose them by force; and their lives generally pay the forfeit of their temerity. The crocodile, therefore, that was once so terrible along the banks of the river Nile, is now neither so large, nor its numbers so great as formerly. The arts of mankind have, *through a course of ages*, powerfully operated to its destruction, and though it is sometimes seen, it appears comparatively timorous and feeble." Goldsm. Hist. of Animals, b. iv. ch. ii. vol. iv. p. 119.

So much for the gradual extinction of those animals, which appear from their remains to have preceded the deluge. With respect to the imperfection in their organization, which intimates, as we are assured, a relation to an earlier stage of existence in the progression with which nature has been gradually developed; admitting the reality of this progressive development, still, in its present state of advancement, while it exhibits, at the lower extreme of the scale, the same marks of organic imperfection which characterized it at its commencement, it seems capable of leading to no satisfactory result. By the progress of inquiry, some curious facts are, however, brought daily to light,

which prove, rather unluckily, that the imperfection charged upon nature should be ascribed to the ignorance of her observers, or the convulsions in which she suffered, when the creature was enclosed in its rocky bed. It was long concluded from the skeleton of the megatherium, preserved at Madrid, that the living animal had not the pubis or ischium; but in the specimen brought by Mr. Parish to London, the defect was supplied, and the conclusions of the comparative anatomists refuted. But to wave this objection, and admit the full charge of organic imperfection; the evidence drawn from one species, unfortunately neutralizes that deduced from another, and still leaves us without any conclusive result. Of those creatures, on whose malconformation the notion of a progressive developement in successive creations is founded; if the organization of the fossil *proves* at one time the age of the stratum, the balance is again happily restored, and the youth of the stratum, at another, *disproves* the age of the fossil. “Among the larger animals,” says Mr. Greenough, “one of the oldest, we are acquainted with, is “the crocodile: now the fossil crocodile is certainly not “more unlike an animal of the present world than the megatherium, the palæotherium, the anoplotherium, which “are all found in rocks *comparatively modern*, or even than “the mastodon, interred *in alluvial soil*.” Crit. Exam. p. 283. “The bones of the crocodile,” he subjoins, “appear “in lias, in Stonesfield slate, in cornbrash, in Oxford-clay, “in Kimmeridge-clay, in Portland-stone, in Tetsworth-clay, “in green-sand, in Maestrich-rock, in London-clay.” Ibid. p. 289.

P. 109. l. 3. Humboldt, Superpos. of Rocks, p. 55. This admission, it must be, however, observed, is but a concession to the claims of truth, as previously and forcibly urged by the President of our native Geological Society. By Mr. Greenough, it had been asserted in nearly the same words, not however before it was proved; “Enough has “been said to show, that, as in different parts of the same

“bed we find different fossils, so also in different beds we find the same fossils.” Crit. Exam. p. 290. d.

Ibid. l. 5. Humboldt, ut supr. p. 56. d. p. 50. c. compare Greenough. ut supr. p. 244. d.

P. 110. l. 9. The early geologists were right in seeking the meaning of the Hebrew terms, *תהו ברו*, *Tohu Bohu*, which they interpret a *chaotic mass*, in the force of the radicals from which they are derived, and in the usage of the ancient cosmogonists by whom they are illustrated; rather than in the Greek of the Septuagint translators: vid. Burnet, Theor. b. i. ch. iv. vol. i. p. 61. Archæol. cap. ix. p. 441. d. Whiston, New Theor. b. ii. hyp. 1. p. 73. sq. The roots of both words are preserved in the cognate dialects of the Hebrew; the Chaldee retaining *תרה* *vastus, rudis fuit*, and the Arabic, *ברה*, *vacuus, inanis fuit*; conf. Hotting. Etymol. Orient. p. 28. 24. Thus our vernacular version appears to be perfectly just, “without form and void;” i. e. “rude, or unformed, and waste.” The translation of the Septuagint, *ἀόρατος καὶ ἀκατασκεύαστος*, “invisible and unfurnished,” which has been taken as the foundation of a hypothesis, there seems little reason to doubt, has been deduced from the Phenician cosmogony. Sanchoniatho as translated by Philo Byblius, had written, *γεγενῆσθαι ἐκ τοῦ Κολπία ἀνέμου, καὶ γυναικὸς αὐτοῦ Βάαυ, τὸντὸ δὲ νύκτα ἐρμηνεύειν*; and had previously represented the beginning of all things, as *ἀέρα ζοφώδη καὶ πνευματώδη ἢ πνοὴν ἀέρος ζοφώδους, καὶ χαὸς θολερὸν ἐρεβῶδες*, “a dark and stormy air, or wind of dark air, and a turbid and dark chaos.” Sanchon. Fragm. ap. Euseb. Præp. Evang. b. i. cap. i. p. 34. b. 33. b. In the *Baau* of the Phenician, Scaliger recognised the *ברה* of the Hebrew; (Vet. Fragm. p. 27;) which, as interpreted *night*, and explained “a dark air;” seems to point out clearly the origin of the term “invisible,” in the Greek version of Ptolemy’s revisers. This meaning accordingly disappears in that of the early Hebrew translators; thus *θων ουβοον*, in Origen’s Hexapla, is rendered by Aquila, *κένωμα*

καὶ οὐθέν, “inanity and nothing;” by Symmachus, ἀργὸν καὶ ἀδιάκριτον, “inert and confused;” and by Theodotian κένον καὶ οὐθέν, “void and nothing:” vid. Montfauc. Hexapl. par. i. p. 2: and thus also St. Jerome, whose knowledge of the original was derived from a native Hebrew, renders the phrase; “inanis et vacua.” In these versions, the sense seems to have been influenced by the meaning of the term χάος, *hiatus*, a χαίνω vel χανῶ, *hisco*: vid. Biel. Lex. sub voc. thus Hesych. χάος· χώρησις, καὶ τὸ κένον, ἀπὸ τοῦ κεχύσθαι, (l. κεχάσθαι) ἢ σκότος. The term *chaos*, it may be therefore concluded, takes its meaning *with us* from the true force of the original Hebrew; not from the perverted sense of the early translators, or the erroneous notions of the pagan cosmogonists.

P. 113. l. 4. By the result of this experiment of sir H. Davy, whereby earths and alkalis were proved to have metallic bases; according to the common voice of chemists, a total revolution was effected in their science, and a new course opened to inquiry in physics. It was supposed, by this great experimentalist, that all *matter* is resolvable into metallic and oxygenous substances. The part of it which constitutes our *earth*, he supposed originally composed of a metallic alloy, so constituted, that when acted upon by the *atmosphere*, it formed in combination with its oxygen an incrustation of earthy matter, extending but to an inconsiderable depth when compared with the diameter of the globe; the nucleus of which he considered a deutoxydised metallic mass. On the infiltration of *water* into the crust of the earth, when it reached this highly inflammable mass, it was decomposed; and from the greater affinity of the oxygen for the metal, hydrogen was set free, that expanding with irresistible force, occasioned violent volcanic action, and burst into flame on reaching the atmosphere. The process which is here followed, in accounting for the structure and constitution of the earth, and in which so considerable a part is ascribed to the agency of the atmosphere and water, preserves a striking analogy to the

progress of the formation of the earth, as described in scripture, in which a no less prominent part is ascribed to the same elements.

P. 114. l. 13. Burnet, Theor. b. ii. ch. viii. vol. i. p. 371. c. Whiston, New. Theor. b. ii. hyp. 3. p. 105.

P. 115. l. 5. Gen. i. 14. In this passage I have substituted “for *times*,” in place of “for *seasons*,” which occurs in our vernacular version: the change being not merely warranted by the force of the original, but by the authority of the ancient and modern translators. The original has לַמּוֹעֲדִים וּלְאַתּוֹת, in which מוֹעֵד, (as its derivation from יָעַד, condixit, intimates,) signifies a set time, Gen. xxi. 2; Exod. ix. 5; 2 Sam. xx. 5; Ps. cii. 13: according to which derivation, it is frequently used to express a festival; 2 Chron. viii. 13; Hos. ii. 11. and, with direct reference to the text, is employed to signify the set time of a month, as measured by the moon: Ps. civ. 19. In the ancient versions, it is accordingly used to express generally *times*, without any direct view to *seasons*: thus the Chaldee uses, לַאֲתִין וּלְזִמְנִין; the Syriac, ܠܐܬܝܢ ܠܙܡܢܝܢ, the Samaritan, ܠܐܬܝܢ ܠܙܡܢܝܢ; the Arabic, اوقاتا واياما, the Greek, εἰς σημεῖα καὶ εἰς καιρούς, and the Latin Vulgate “in “*signa et tempora*,” all agreeing with the literal version of the original by Pagnini, “in *signa et tempora*.” Of the modern versions, the German of Luther has “und geben “*Zeichen, Zeiten*,” and the Spanish of Scio, “y sean “*para senales y tiempos*.” The French indeed, agreeing with the English, has “de signes et pour les *saisons*,” and the Italian of Diodati “per signi e per distinguere le *stagioni*.”

Ibid. l. 8. Ibid. viii. 22.

P. 116. l. 10. Halley, Theor. of Var. of Magn. Philos. Trans. No. 195.

Ibid. l. 17. Wronski, Addr. to Board of Long. p. 47.

P. 118. l. 12. Voy. Laplace Syst. du Monde, liv. iv. ch. xi. p. 266. Mécan. Célest. liv. xi. ch. i. tom. v. p. 14.

P. 119. l. 2. Of 100 parts of atmospheric air, 80 are found to be nitrogen, 18 oxygen, and 2 carbonic acid, gas. The nitrogen, which thus appears to be the most abundant element in air, is also found to be generally dispersed in animal substances. As the flesh of animals produces it by putrefaction, the destruction of those which perished in the deluge may be supposed to have considerably affected the purity of the postdiluvian atmosphere. Such a supposition agrees with the notions of the early geologists, who conceived that the state of the atmosphere differed considerably before and after the flood. See Burnet, *ut supr.* b. ii. ch. iii. p. 269. Whiston, *ut supr.* sol. 28. p. 356.

Ibid. l. 16. The Hebrew רקיע, *expansum*, as derived from רקע, *expandit*, Pih. *diduxit*, is unaffected by the difficulties to which the Greek στερέωμα, *firmentum*, is exposed. In this instance, as in that already noticed, the Hellenist translators of the Scriptures suffered their philosophical notions to influence them in rendering the original. In the doctrine of the Chaldees, as expressed in the Zoroastrian Oracles, the term is retained;

Ἐπτά γὰρ ἐξώγκωσε Πατὴρ στερεώματα κόσμων,
Τὸν οὐρανὸν κυρτῷ σχήματι περικλείσας,
Πῆξε δὲ πολὺν ὄμιλον ἀστέρων ἀπλανῶν,
Ζῶων δὲ πλανωμένων ὑφέστηκεν ἐπτάδα.

Orac. Chald. 182.

On the term στερεώματα, Le Clerc observes; “Videntur
“Chaldæi usi esse voce, רקיע *rakiah*, quæ ita à LXX. Intt.
“vertitur, et hoc potest esse indicium hæc Chaldaicè scripta,
“quale postea proferemus. Ceterùm cœlos, seu mundos
“dici στερεώματα crediderim, non quòd Chaldæi eos solidos
“esse existimarent, sed quòd στερεῶσι, *firment* hoc est, con-
“stringant et impediant quominùs diffuant ea quæ ambi-
“unt.” Not. in Orac. Chald. ap. Cleric. Pneumatol. tom. ii.
p. 361. If the meaning be taken from the original, which
perfectly accords with the context; it leads us to a different
sense, and such as involves no scientific difficulty. In this

example, as in numberless others of the same kind, we have an instance of the erroneous views which would have distinguished the philosophy of Scripture, had its author drawn only from the human sources, which were accessible to his translators. The notion, that the planets were animated, to which the ancients betook themselves, in order to explain their motion, was not merely adopted by Origen but by Kepler. Vid. Princip. lib. i. c. 7. tom. i. p. 72. Huet. Origenian. lib. ii. quæst. 8.

P. 121. l. 3. Gen. ii. 5. וָאֵרַח מִן הָאָרֶץ; the literal force of this passage, as expressed by Pagnini, “*et vapor*” “*ascendebat de terrâ*,” is given in our version, “but there went up a *mist* from the earth;” in the Italian, “or un *vapore* saliva dalla terra;” and in the German, “aber ein *Nebel* gieng auf von der Erde.” The philosophical difficulty of the passage, however, has led to its misrepresentation; and the different senses ascribed to it may be subjoined, as exemplifying the remark in the antecedent note. The Chaldee indeed, coming near to the original has; עֲנַנָא הוּא סִלְק מִן אַרְעָא “*et nubes ascendebat de terrâ*;” and the Samaritan; נִבְלָה אֲסַלְמָה מִן אֶרֶץ “*nubes autem ascendebat de terrâ*.” But the process whereby dew is produced not being understood; the fact asserted in the text has been misrepresented or denied, by the translators, according to their preconceived notions. Thus the Greek has, πηγὴ δὲ ἀνέβαινεν ἐκ τῆς γῆς, “*fons autem ascendebat*” “*è terrâ*,” which is followed by the Syriac; סַבְכַּבְדָּא מִן אֶרֶץ; and the Latin: “*sed fons ascendebat è*” “*terrâ*.” The negative being on the other hand borrowed from the context, the Arabic has; وَلَا جَارٍ كَانَ يُصْعَلُ “*nec exhalatio ascendebat ex eâ, ut irrigaret*,” &c. and what is more extraordinary, the French has, “*et au-*” “*cune vapeur ne montoit de la terre*.” On the experiments, by which the scripture view of this phenomenon has been established, the reader may be referred to sir W. Herschel’s Introd. to Nat. Phil. §. 163. p. 159. sq. He particularly

observes, to our purpose; p. 160. “Now, 1st, no dew is
 “produced on the surface of polished metals, but it is very
 “copiously on glass, both exposed with their faces upwards,
 “and in some cases *the under side* of a horizontal plate
 “of glass is also *dewed*: which last circumstance excludes
 “*the fall* of moisture from the sky in an invisible form,
 “which would *naturally suggest* itself as a cause.”

P. 122. l. 10. Gen. ix. 14.

P. 124. l. 17. Gen. viii. 1.

P. 126. l. 25. 2 Pet. iii. 6.

P. 128. l. 9. The strongest proof of the spirit, with which the sacred historian delivered himself, is perhaps deducible from *the order* with which the process of the creation is described as carried on in Scripture. It presents itself under two aspects, which tend to establish the unimpeachable truth of the narrative; the course in which the objects of nature are represented as brought into existence, is not merely that which philosophy strictly prescribes; but the recurrence which is had, on its failure, to the intervention of the Deity, is limited by the incompetency of philosophy to account for the production of those things by natural causes, for which recourse is had to preternatural. From the creation of matter out of nothing, to the formation of man, the most perfect of organised beings, the progressive development is marked by a regularity, which cannot be deserted without an infraction of the principles of science. And of the philosophic propriety with which the immediate intervention of the Deity is called in, the instances adduced from Newton form an extraordinary illustration; the force of which will be more striking when collectively regarded; see note to p. 62. l. 6. p. 69. l. 11. p. 75. l. 24.

Ibid. l. 28. For the physical truth of these observations, Laplace may be taken as a voucher. “Sans la pression de
 “l’atmosphère, la glace fondue se reduiroit en vapeurs;
 “mais cette pression contient la force répulsive que la
 “chaleur communique aux molécules fluides, et maintient
 “la glace fondue, sous forme d’eau, jusqu’à ce que la

“chaleur soit assez grande pour que sa force répulsive
 “l’emporte sur la pression de l’atmosphère. A cet instant
 “l’eau entre en ébullition, et se réduit en vapeurs; le degré
 “de température de l’eau bouillante varie donc avec la
 “pression de l’atmosphère: il est moindre au sommet des
 “montagnes, qu’au niveau des mers; et dans un récipient
 “dans lequel on peut raréfier et condenser l’air à volonté,
 “on peut accroître ou diminuer à volonté la chaleur de
 “l’eau bouillante. Ainsi *la chaleur rend la mer fluide*, et
 “*la pression de l’atmosphère l’empêche de se réduire en*
 “*vapeurs.*” Système du Monde, liv. i. ch. xiv. p. 92. b.

P. 129. l. 8. Gen. i. 2.

P. 130. l. 15. The objections to which the mineral geologists have exposed themselves, have been considerably aggravated, by a most estimable man and accomplished scholar; who charges them with having departed from the first principles of Philosophy, as laid down by Bacon and Newton. I have elsewhere stated my reasons for believing that the views of both these philosophers, on which the charge is founded, have been unfortunately misapprehended. It will not, I think, be long contested, that Bacon’s authority cannot be consistently urged against any sect of natural philosophers, who confine themselves in their investigations to merely physical causes: the strong recommendation which he has given to this method, to the exclusion of such as are final, has drawn on himself the censure, not merely of following an irreligious, but yielding to an atheistic bias: see note on p. 2. l. 24. p. 3. l. 5. The charge of having deviated from the sound philosophical principles, which Newton recommended by precept and example, has been urged against them, by one of their own order; who accuses them of having multiplied causes, when one would have been adequate to satisfy the conditions of the problem, of which they have undertaken to give the solution; see Greenough, Crit. Exam. ut supr. p. 152. The error, however, which is particularly chargeable on their philosophy lies in the waywardness or ill luck, by which they have been induced to regard

the different formations in their systems, in the light of successive *creations*. To this conclusion they were inevitably led, by the assumption of what they have failed to prove, that *the earth* bears evidence of a progressive development; as it is obvious, the species of organic beings which had perished in one catastrophe, and were succeeded by others destined to undergo a like fate, were alone capable of being replaced by an act of *creative* power. By this assumption, however, the subject was atonce transferred from the province of philosophy to that of revelation; as when this point was once assumed, the object was directly changed, from the investigation of secondary and physical causes, to the inquiry after a first and final; by which it was placed beyond the pale of merely Natural Science. No one could be more deeply impressed than Bacon, with the sense, that when our inquiries ascend thus high, we can discover nothing of God and his operations, but what he is pleased to inform us by revelation. But by the charge of such errors, it is barely justice to Mr. Greenough to acknowledge, that his "Critical Examination" is not in the least affected. So far is he from recurring to the notion of successive destructions and creations of the earth, that he employs the entire force of his reasoning powers to disprove the existence of the formations on which that notion is sustained, and not only asserts the adequacy of a single deluge to explain the phenomena of the earth, but charges those who sought the explanation in additional causes, with transgressing the principles recommended by Newton. Having been thus limited by his subject, in explaining the theory of the earth, to merely natural causes; by which Bacon and Newton conceived the course of nature preserved, since the time of the creation; he has strictly followed the course which they prescribed in arriving at his conclusion. I cannot admit, without abandoning the ground which I have myself taken up, that his observations on the nebular hypotheses of Herschel and Laplace are inconsistent with the Mosiac account of the Creation; and it must be a sufficient

evidence of his respect for the record of the deluge, that he has not only established the fact, but proved the date of that catastrophe as deducible from Scripture. See Crit. Exam. p. 149. d. 157. c. sq. 170. c. sq.

LECTURE IV.

P. 134. l. 18. The “Disquisition on Final Causes,” by the excellent and celebrated Boyle, is a rich magazine, in which the chief observations may be found that Natural theologians have adduced in support of their system. It not only vindicates the wisdom and goodness of God, but illustrates the particular rank which he has assigned *man* in the universe. The object of final causes being the manifestation of those attributes of the Deity, to whom he owes his existence and rank in the creation; a being capable of appreciating the effect manifested seems necessary to the consistency of the system. Cf. prop. v. p. 550. Fodéré Physiol. Pos. ut infr. §. 823. tom. iii. p. 235.

P. 135. l. 7. Lawrence, Lect. iv. on Physiol. and Zoolog. p. 93. b. third ed.

Ibid. l. 13. Id. ibid. p. 95. b. p. 204.

P. 136. l. 8. Voy. Physiolog. Positiv. par. F. E. Fodéré, M. D. ch. xii. §. 819—837. ch. xiii. §. 955—984. tom. iii. p. 230. 375. suiv. A very slight smattering in metaphysical science will enable the least experienced reader to fathom and appreciate the shallow crudities put forth not long since, at the Royal College of Surgeons, by the professor of Anatomy and Surgery, to that *learned* body. But to enable him to form an accurate estimate of the worth and modesty, as well as of the talents and attainments of the lecturer; he may be recommended, on perusing the preceding passages in the work of a man of education and science, to turn to Professor Lawrence: Lect. iii. p. 67. sq. Lect. iv. p. 91. sq. Comp. note on p. 145. l. 15.

Ibid. l. 12. With the peculiar nature of the Jewish polity, as a Theocracy, the inculcation of the doctrine of a future and spiritual state, as opposed to the present temporal state, in which God dispensed justice in person, was obviously inconsistent. The prophets having been the instructors of the Jews, in “spiritual things;” from them, the knowledge of the soul in a future state was properly acquired. Of both tenets David and Solomon speak in a manner too plain to be misunderstood; Ps. xvi. 10. Eccles. iii. 20, 21. and the visit of Saul to the witch of Endor conveys a practical proof, that the belief in the soul’s immortality and existence in a future state was generally prevalent. Such was the opinion of one of the Jewish priesthood: vid. Joseph. Antiq. lib. vi. cap. xv. p. 204. g. Our Lord and his apostles address the Jews on this subject in such a manner as to leave no room for doubt, that the opinion was embraced by the Jewish nation, with the exception of an inconsiderable sect, whose scepticism was easily confuted. vid. Matt. xxii. 23—34.

Ibid. l. 16. Matt. x. 28.

P. 137. l. 3. Ps. xvi. 10. Acts ii. 27. 31.

Ibid. l. 8. Luke xxiii. 46.

Ibid. l. 10. Ibid. 43.

Ibid. l. 20. Wollast. Relig. of Nature Delin. sect. ix. §. vi. p. 184. sq. Butler, Analog. of Nat. and Rev. Relig. par. i. ch. i. §. 2. p. 2. sq. Clarke, Letter to Dodwell, and Defence, &c. Works, vol. iii. p. 730. 757. cf. p. 765. 769. c. 837. et vol. ii. p. 753. d. Fodéré, Physiol. Posit. ut supr. comp. §. 961, 962, 971, 972. Introd. p. li. suiv.

Ibid. l. 30, Newton, Princip. Schol. gen. ad fin. “Videmus tantùm corporum figuras et colores; audimus tantùm sonos; tangimus tantùm superficies externas; olfacimus odores solos; et gustamus sapes: *internas substantias* nullo sensu, nullâ actione reflexâ cognoscimus.” Cf. Locke on Understand. b. ii. ch. xxiii. §. 2. 15. 23. 26. 28. 31. 32. Fodéré, ut supr. Introd. p. liii. d.

P. 138. l. 7. Wollast. ut supr. §. vii. p. 186. Butler, Anal.

ut supr. p. 7. Clarke ut supr. p. 769. c. p. 784. c. Fodéré, ut supr. p. lvii. Burnet, *Theory*, vol. i. p. 418.

Ibid. l. 11. Fodéré, ut supr. Introd. p. lii. a. Boyle *Disquis. on Fin. Caus.* ut supr. p. 550.

Ibid. l. 22. Vid. Fodéré, ut supr. §. 916. p. 331. comp. p. 375.

P. 139. l. 18. Comp. note on p. 138. l. 7. p. 157. l. 25.

P. 141. l. 10. The decisions of Science, in this respect, confirm the declarations of Revelation: “ J’appelle passions, “ les mouvemens communiqués au cerveau par l’entermède “ du système nerveux, et provenant de l’action augmentée “ du cœur, des poumons, de l’estomac, du foie, de la rate, “ des organes . . . les différens viscères ont, comme nous “ l’avons déjà vu, des affections particulières, relatives aux “ sucs qu’ils secrètent, et aux fonctions aux quelles ils sont “ destinés,” &c. Voy. Fodéré, ut supr. §. 975—977. tom. iii. p. 410.

Ibid. l. 15. Gal. v. 17.

P. 142. l. 3. Fodéré, *ibid.* §. 977. p. 414. “ Mais quelle “ différence entre les passions des animaux et celle de “ l’homme, quoique les mêmes pour le fond? Elles ne du- “ rent, chez les premiers, qu’autant que subsiste la cause “ qui les fait naître; au contraire, l’imagination de l’homme “ s’en empare et les transforme en une source féconde d’illu- “ sions qui l’occupent pendant toute la vie: les animaux “ obéissent irrésistiblement aux passions, et ne peuvent être “ détournés que par la force et par la violence; l’homme, “ au contraire, à moins d’une disposition organique qui de- “ vient maladie, peut modérer ses passions, les appliquer à “ un but utile, et même les étouffer, pour ne jamais obéir “ qu’à sa raison, ainsi que les temps passés et les temps mo- “ dernes nous en offrent des exemples nombreux.”

Ibid. l. 5. 1 Pet. ii. 11.

P. 143. l. 13. Ps. cxlv. 9.

P. 144. l. 10. Gen. i. 21. 25. 31.

Ibid. l. 14. Liv. xvii. 11. Cf. *Outram de Sacrif.* lib. i. cap. xxii. p. 264. 276. cap. ix. p. 101.

Ibid. l. 26. A physiological lecturer, of whose qualifications I have already had occasion to speak, regards this subject in a different aspect. The hearers of Professor Lawrence, were, not long since, instructed, that “there would be little inducement to compare together the various animal structures, . . . unless the structure were a measure and criterion of the function. . . . Each function ends, when the respective organ ceases. This is true throughout zoology; there is no exception in behalf of any vital manifestations.” Lect. vii. p. 90. d.

P. 145. l. 15. Voy. Fodéré ut supr. tom. iii. ch. xii. sect. i. “Des sens, considérés dans tout le règne animal.” p. 230. sq. sect. ii. “Education des sens, erreurs qu’ils occasionnent,” &c. p. 248. sq. Comp. Lawrence ut supr. Lect. iv. p. 8. b. sq. The reader is invited to engage in this comparative estimate; not merely for the purpose of learning, experimentally, how the prosecution of a similar route may lead to the most opposite conclusions; but of enjoying the amusement of a fine contrast, that, while it explains the seeming paradox, exhibits the presumption of charlatanry, confronted with the eviction of science, in a manner that will not be easily paralleled. Did the increasing magnitude of these notes permit, I would willingly enrich my pages with ample extracts from the invaluable work of the able physician and accomplished scholar, to whose rank and reputation I feel an apology to be due, for bringing him, for a moment, into such company: of whom, even envy must admit, that he has brought, to the discussion of a subject of no ordinary delicacy and extent, besides great professional skill and experience, a profound knowledge of science in its utmost range, and an intimate acquaintance with general literature. One passage may be however extracted from a mass of valuable matter: as a corrective to the error so crudely and confidently advanced in the preceding note. After mentioning the power which man possesses, to give to one sense a superiority over another; and particularly the capacity of the blind to supply the absence of sight by the touch, and

of the dumb to supply the want of hearing by the sight, he adds; “cette prérogative *ne tient certainement pas à une* “ *meilleure organisation*, mais *elle dépend* de l’exercice que “ l’homme, guidé par son intelligence, est capable de faire “ *à ses sens*; tellement que l’individu le mieux organisé “ peut perdre l’habitude de voir, de marcher, de parler, “ etc. s’il se condamne long-temps au silence, à l’obscurité “ et à l’inaction: ainsi se trouvent complètement rouillés “ les sens du toucher et de l’ouïe de l’homme sauvage; ainsi “ l’homme de lettres, uniquement occupé des abstractions “ de l’esprit, finit par être étranger aux usages de la société; “ et nous avons vu les chartreux qui ne parvenoient jamais “ aux charges de l’ordre, devenir les plus stupides des mor- “ tels.” Fodéré, *ibid.* p. 246. Let us after these luminous views again attend to the confident assertions of the Lecturer; “*I consider the difference*,” he observes, “between “ man and animals, in propensities, feelings, and intellectual “ faculties, *to be the result* of the same cause as that which “ we assign for the variations in other functions, viz. *difference of organisation*; and that the superiority of man in “ rational endowments is not greater than the more exquisite, complicated, and perfectly developed *structure of his* “ *brain*, and particularly of his ample cerebral hemispheres, “ to which the rest of the animal kingdom offers no parallel, “ nor even any near approximation, is sufficient to account “ for. That *the senses* of man and of other animals *will* “ *not* explain all their varied and wonderful mental phenomena; and that the superiority of man can *by no means* “ be deduced from any preeminence *in this part* of his construction; are truths too *obvious* to require farther notice.” Lawrence, *ibid.* p. 203. c. That the ignorance of this confident talker is coëxtensive with his presumption, may be clearly seen, on turning to the observations of one, who, while he possessed the same structure of *brain* with other men, differed from them in wanting *one* of their *senses*: see note to p. 148. l. 6. p. 151. l. 29.

Ibid. l. 24. Fodéré ut *supr.* §. 832. p. 244.

P. 145. l. 29. Id. *ibid.* §. 834. p. 247.

P. 146. l. 3. No exception can be made in favor of those animals, which resemble the human species, in possessing hands, in place of fore feet; from the necessity imposed upon them to move upon all four, their extremities become equally callous, as if they had been rendered hard by nature. “Add to this,” observes Goldsmith, “that when we examine the palms of their hands and the soles of their feet we find both equally callous and beaten; a certain proof that both have been equally used. In those hot countries, where the apes are known to reside, the soles of the Negroes’ feet, who go barefoot, are covered with a skin an inch thick; while the hands are as soft as those of an European. Did the apes walk in the same manner, the same exercise would have furnished them with similar advantages, which is not the case.” *Hist. of Anim.* b. vii. ch. i. p. 474.

Ibid. l. 16. See note to p. 155. l. 30.

P. 147. l. 9. Locke on Hum. Underst. b. ii. ch. ix. §. 8.

Ibid. l. 25. Cheselden, *Anatom.* Append. ch. ii. p. 12. fourth edit.

P. 148. l. 6. Cheselden expresses in the following terms, the manner in which the youth, on whom he performed the operation, was affected in his vision; “When he first saw, he was so far from making any judgment about *distances*, that he thought *all objects* whatever *touched his eyes*, (as he expressed it,) as what he felt did his skin, and thought no objects so agreeable as those which were smooth and regular, though he could form *no judgment of their shape or magnitude*, or guess what it was in any object that was pleasing to him: but upon being told what things were, whose form he before knew, he would carefully observe that he might know them again; but having too many objects to learn at once he forgot many of them . . . One particular only, though it may appear trifling, I will relate. Having often forgot which was the cat, and which the dog, he was ashamed to ask; but catching the cat

“ which *he knew by feeling*, he was observed to look at it “ steadfastly and then putting it down, said, So puss!” Append. *ibid.* p. 14. see note on p. 151. l. 29.

P. 148. l. 12. Locke, *ut supr.* §. 9. comp. Fodéré, *ut supr.* §. 840. p. 256.

Ibid. l. 18. Fodéré, *ibid.* §. 838. 841. p. 253. b. 257. c. Locke, *ibid.* §. 9. comp. Cheseld. *supr.* note to l. 6.

P. 149. l. 2. Voy. Fodéré, *ibid.* §. 836. *suiv.* p. 250. *sq.*

Ibid. l. 14. On this subject the acute and learned physiologist, already cited, delivers himself in the following terms; “ Qui plus est, nous pouvons presque affirmer que les sensations des animaux, relatives à la vue et à l’ouïe, sont “ différentes des nôtres : nous verrons, à la Section suivante, “ que ces sens nous induiroient à *des erreurs nombreuses*, si “ elles n’étoient *rectifiées*, non-seulement par *le toucher*, mais “ encore par les moyens du comparaison qui n’appartiennent “ qu’à *l’intelligence* ; comment les animaux les rectifieroient- “ ils eux qui manquent, en grande partie, du sens du *toucher*, “ et dont les comparaisons, s’ils en sont capables, doivent “ être infiniment bornées ? Nous sommes donc presque cer- “ tains qu’ils voient les objets plus gros, plus multipliés, et “ plus près qu’ils ne sont ; qu’un grand bruit qui se passe “ dans le lointain, fait chez eux la même impression, que s’il “ se passoit dans leur voisinage.” . . . Fodéré, *ibid.* §. 834. p. 247. He adds shortly after ; “ Nous pouvons aussi pré- “ sumer qu’ils nous voient *plus gros* que nous ne sommes “ réellement, et que cette illusion d’optique ajoute beaucoup “ à notre puissance. Ne doit-on pas conclure que si le nom- “ bre et la perfection des sens sont la mesure absolue de la “ supériorité relative des diverses classes d’animaux, ils ne “ suffisent pas pour les égaliser à l’homme ; et l’on peut être “ surpris, à juste titre, que des observations aussi simples “ aient échappé au génie d’Helvetius, et de ses serviles con- “ tinuateurs !” *Ibid.* 248. c. This point may be indeed said to have been experimentally proved, in the instance of the youth, on whom the operation already described was performed : “ At first,” continues Cheselden, “ he could bear

“ very little light, and the things he saw *he thought extremely large*; but upon seeing things larger, those first seen he conceived less, never being able to imagine any lines beyond the bounds he saw; the room he was in, he said, he knew to be but part of the house, yet he could not conceive that the whole house could look bigger. . . . Being lately couched of his other eye, he says, that objects *at first appeared large* to this eye, but not *so large* as they did at first to the other; and looking upon the same object with both eyes, he thought it looked *about twice as large* as with the first couched eye only, but not double, that we can in any way discover.” Ibid.

P. 150. l. 4. Mark viii. 22. sq.

Ibid. l. 10. 12. Ibid. 24, 25.

P. 151. l. 29. It may be infallibly concluded, from the difficulty, which the person, already mentioned as couched, experienced, in acquiring through the sense of *seeing* simple ideas of those substances with which he was already acquainted; that the sense of *smelling* must have been utterly incompetent to contribute in removing it. See n. on p. 148. l. 6. 149. l. 2. And yet this person whose remarks prove him to have been intelligent, must have possessed incalculable advantages in the facility of perception, above those animals which were devoid of *touch*; as, through this sense, he had *already* acquired those ideas, in being acquainted with *solidity* and *extension*. Where, however, the test of *this sense* could not be applied; the impressions newly conveyed through the sight derived little advantage from any ideas previously acquired. “ We thought,” observes Cheselden, “ he soon knew what pictures represented which were shewn to him, but we found afterwards we were mistaken: for about two months after he was couched, he discovered at once they represented solid bodies; when to that time he considered them only as party-coloured plains, or surfaces diversified with a variety of paint: but even then he was no less surprised, expecting the pictures *would feel like the things they represented*, and was amazed

“ when he found those parts, which by their light and shadow appeared now round and uneven, *felt only flat* like the rest, and asked which was the lying sense, *feeling* or *seeing*? Being shewn his father’s picture in a locket of his mother’s watch, and told what it was, he acknowledged a likeness, but was vastly surprised; asking how it could be, that a *large face* could be expressed in *so little room*; saying, it should have seemed as impossible to have put a bushel of any thing into a pint.” Beyond the decision of these points, which may be said to be determined on the experience of our senses, the question respecting the perception of animals by sight, when even assisted by smell, admits not of a moment’s discussion. The difficulty felt by the person from whose observation the preceding remarks were drawn, lay in the circumstance of his judgment not having been informed of the nature of *relief* and *perspective*; without a knowledge of which, all vision must be imperfect, and distance cannot be possibly computed.

P. 153. l. 26. Locke on the Understand. b. i. ch. iii.

Ibid. l. 28. See Felton’s Moyer’s Lectures, Introd. p. xxiv. d.

P. 154. l. 8. Those with whom Mr. Lawrence’s testimony passes for authority may take it in his own words. Lect. on Nat. Hist. par. ii. ch. viii. p. 408. d. “ The distinction of color between the white and black races is not more striking, than the preëminence of the former in moral feelings and mental endowments. The *latter*, it is true, exhibit generally a great acuteness of the external senses, which, in some instances is heightened by exercise, to a degree nearly incredible.” But the remarks of the same writer, on the inferiority manifested in the civilized, as opposed to the savage state, are marked with his usual shallowness of observation; see ch. v. p. 339. d. The difference is resolvable into that of the objects, on which the senses are exercised in each state; and which lead, in each, to a correspondent degree of perfection in the senses, that

could not unite in the same individual. “ Dans la vie civilisée,” says a very different observer, “ *le goût* est le sens dominant de plusieurs hommes nés dans l’opulence, tandis qu’il est très-foible chez celui qui ne mange que pour vivre. *L’œil* du peintre, *l’oreille* du musicien, decouvrent, le premier dans un tableau, le second dans un concert, des beautés que le vulgaire laisse échapper. Il est donc dans la puissance de l’homme de donner à tel ou *tel sens* une supériorité sur *les autres*,” &c. Fodéré, ut supr. §. 833. p. 245. comp. §. 357. 358. When a superiority is supposed *in some* of them, absolute perfection *in all* cannot exist even in conception. The time that is consumed in the cultivation of several senses, must preclude the constant exercise, which is necessary to the perfection of any. Comp. Fodéré, ut supr. §. 364. 367. tom. ii. p. 81. sq.

P. 154. l. 30. Fodéré, ut supr. §. 369; tom. ii. p. 90.

P. 155. l. 26. Voy. Fodéré, ut supr. §. 369. tom. ii. p. 90. suiv.

Ibid. l. 30. Our ignorance, not merely of the nature of *life*, but of sensibility, motivity, and excitability, in which it is manifested, render us wholly incompetent to determine any thing certain, on the nature of the instincts of animals, or even of their perception. Not only the *physical causes* by which those visible effects are experimentally produced, but the *mechanical structure* of the organ in which they are manifested, induce the conclusion, adopted by Des-Cartes, Gassendi, Willis, and others, that they are automatic; see Ray on Wisd. of God in the Creat. p. 42. To these may be added Leibnitz; who rejects the solution of those that adopt the dramatic expedient of betaking themselves to a preternatural cause, when at a loss for a natural. “ Quant aux mouvemens,” he observes, “ des corps célestes, et, plus encore, quant à la formation des plantes et *des animaux*, il n’y a rien qui tienne du miracle, excepté le commencement de ces choses. L’organisme des animaux est un *mécanisme*, qui suppose une préformation divine, ce qui en suit est purement naturel, et tout-à-fait *mécanique*.”

Ecrit V. à Clarke, §. 115. p. 168. While to mechanism we must add sensibility, (Voy. Fodéré, §. 351. 353. 354.) suitably to the difference between animal organisation, and insensible matter; we must conclude, that its excitement is coexistent with the cause that produces it, and thus conceive it constantly dependent on physical impulse. “The sufferings of brutes are not like the sufferings of men: *they perceive by moments*, without reflexion upon past or future, upon causes, circumstances,” &c. Wollast. ut supr. sect. 2. p. 34. Here, however, speculation must terminate, from the limitation of our experience; which though inadequate to satisfy our doubts, is sufficient to silence objections: our “ideas of the power of communicating motion by impulse, and of exciting motion by thought,” being, as Locke admits, involved in equal difficulties. “These ideas,” he observes, “the one of body, the other of our minds, every day’s experience clearly furnishes us with: but if here again we inquire *how* this is done, we are *equally in the dark*. For to the *communication of motion by impulse*, wherein as much motion is lost to one body as is got to the other, which is the ordinarist case, we can have no other conception, but of the passing of motion out of one body into another; which, I think, is *as obscure and inconceivable*, as how *our minds move or stop our bodies by thought*, which we every moment find they do.” Ess. on Hum. Underst. b. ii. ch. xxiii. §. 28. Comp. ib. ch. xxvii. §. 5. b. iv. ch. iii. §. 6. and n. See also Fodéré, ut supr. §. 355. 367. 563. 577. 578. 590. 594. 595. 612. 613. &c. tom. ii. p. 71, &c. The above explanation, in whatever light it may be regarded, will be deemed atleast preferable to the solution of those, who impute the instinct of animals to the direct impulse of the Deity; although, since this notion has been espoused by Bayle, it has been supported by high authority. See Addison, Spectat. No. 120. Butler’s Analogy, par. ii. ch. iii. p. 187. Kidd, Inaug. Lect. p. 45.

P. 156. l. 3. Voy. Fodéré, ut supr. §. 836. p. 251. c.

P. 156. l. 16. See Felton, ut supr. p. xxviii. Fodéré, ut supr. §. 971. tom. iii. p. 399. Whether these properties of the mind be regarded as the effect of intuition or education, and be classed under perceptions of instinct, or inferences of reason; is ultimately of no real importance to my argument. See Locke, ut supr. b. i. ch. iii. §. 1. Wollaston, ut supr. l. 3. §. 8. p. 45. Under whatever *name* the moral sense is known; while it is admitted to be the distinctive attribute of man, it places that essential difference between him and brutes, by which the question of human and animal souls may be determined.

P. 157. l. 25. The absurdity of deducing thought from matter is particularly shewn by Clarke, 3rd. Def. of Immort. of Soul, vol. iii. p. 834. sq. Wollast. Relig. of Nat. sect. ix. §. 7. p. 186. Locke on Understand. b. iv. ch. x. §. 16. Bentley, Boyle Lect. II. p. 55. Comp. infr. note on p. 159. l. 26.

P. 158. l. 1. To such “beastly nonsense,” to borrow a phrase from Warburton, that rank empiricism necessarily leads, which pretends to deduce intellectual operations from material organisation. “The same kind of facts,” observes Surgeon and Professor Lawrence, “the same reasoning, the “ same sort of evidence altogether, which shew digestion to “ be the function of the alimentary canal, the motion of the “ muscles, and various *secretions* of their respective glands, “ prove that sensation, perception, memory, judgment, rea- “ soning, thought,—in a word, all the manifestations called “ *mental* or *intellectual*—are the animal functions of their “ appropriate organic apparatus, the central organ of the “ nervous system. No difficulty nor obscurity belongs to “ the latter case, which does not equally affect all the for- “ mer instances: no kind of evidence connects the living “ processes with the material instruments in the one, which “ does not apply just as clearly and as forcibly to the other.” Ut supr. p. 90. It is at once amusing and instructive to perceive the odour in which these feculent “ secretions” of M. Cabanis’ brains are held, by the informed and intelligent physiologists of France; from whence they have been

transplanted for the enrichment of our native soil, once respected for its early scientific productiveness. “Qu’a-t-on
 “mis,” observes a physiologist and physician, “à la place
 “de cette idée sublime qui ennoblit l’homme, lorsqu’elle
 “n’est pas dénaturée par la superstition; qui lui donne des
 “consolations et des espérances, qui le rend généreux, magnanime, libre dans les fers, juste, bienfaisant! Celui qui a
 “passé sa vie entière à la recherche du vrai, sera-t-il plus
 “satisfait de la supposition gratuite de l’action et de la
 “réaction mécanique des nerfs; de lire que *le cerveau* digère
 “en quelque sorte les impressions; qu’il fait organiquement
 “la *sécrétion* de la pensée Une propriété *sé-*
 “*crétée*! Il faut donc que, comme l’excès de la
 “santé conduit aux maladies, de même, l’abus de l’esprit
 “conduise à la déraison. Certes je combattrois de semblables propositions avec courage, si elles pouvoient être
 “*contagieuses*, car nous *devons l’instruction à nos semblables*; mais leurs auteurs même n’ont pu les avancer *sérieusement*. Ce qui m’afflige, c’est qu’elles aient été mise
 “en avant par des hommes de mérite . . . par des médecins
 “qui connoissent la nature humaine, et qui ont dû voir
 “souvent le peu de ressource que nous retirons de l’inspection la plus minutieuse du cerveau.” *Physiol. Positiv.*
 ut supr. *Introd.* p. lvii. comp. §. 962. 963. tom iii. p. 385. c. 389. a.

P. 158. l. 5. See Locke on Understand. b. ii. ch. xxiii. §. 12.

Ibid. l. 10. Vid. Lactant. Div. Instit. lib. iii. cap. x.

P. 159. l. 5. Voy. Fodéré, ut supr. *Introd.* p. xlviii. n.

Ibid. l. 16. See Butler’s Analog. ut supr. par. i. ch. i. §. 1. p. 4. sq. The metaphysical part of Bp. Butler’s argument is professedly adopted from Dr. Clarke; Butler, *ibid.* p. 7. Clarke, Lett. to Dodw. ut supr. vol. iii. p. 757. cf. p. 784. c. As both of these acute metaphysicians have admitted, it is exposed to the objection of being “equally applicable to
 “brutes:” Butler, *ibid.* p. 14. b. Clarke, *ibid.* p. 763. c. 777. c. 752. d. This inconvenience, I believe, arises from

an assumption, that “the living powers and consciousness” of brutes are such as the analogy between the human and bestial nature will not justify us in supposing. Had the profound author of “the Analogy” in the beginning of the chapter, instead of the end of it, distinguished between “the state of sensation, and of reflection,” and ranked the animal nature in the former; his distinction at the close of it (§. 3. p. 15.) that there is no concluding the extinction “of the thinking and reflecting powers” from the destruction of the sentient powers, would have placed his argument beyond the reach of exception. The supposition that brutes are possessed of such powers, is not merely gratuitous, but contrary to experience. As we must consequently infer their total annihilation, in the destruction of their sensitive powers; every difficulty respecting the existence or destination of their souls necessarily disappears. *Comp. Fodéré, ut supr. §. 353. 354. tom. ii. p. 66. §. 955. 957. tom. iii. p. 375. 394.*

The sensation which they are thus assigned, as residing in their nervous system, is necessarily coëxtensive with their bodily frames; and the consciousness which attends it consequently commensurate with both. They are thus placed out of the range of the argument founded exclusively on the consciousness of thinking and reflecting creatures; which exists only in the mind. As their sensation, which is limited only to corporal, as opposed to mental affection and suffering, is capable of being reduced or extinguished, as they are dismembered and destroyed; it is of course divisible and discernible, and consequently of a nature essentially different from the consciousness, on which the soul’s immaterial and immortal nature is shewn in the argument to depend. For it may be justly observed of the mental principle; on which the demonstration depends, in the author’s words; “we see by experience that men may lose “their limbs, their organs of sense, and even the greatest part of their bodies, and yet remain the same living “agents.” *Butler, ibid. p. 8.*

P. 159. l. 25. Butler, *ibid.* p. 7. Cf. S. Ambros. de Paradis. cap. viii. col. 130. e.

P. 161. l. 11. 1 Cor. xv. 47, 49, 53.

Ibid. l. 9. Orig. Select. in Gen. tom. ii. p. 26.

Ibid. l. 28. Rom. vii. 18, 23. viii. 23; James, i. 15.

P. 162. l. 4. Origen. in Gen. *ibid.* S. August. Retract. lib. i. col. 40. S. Ambros. Hexaem. lib. vi. col. 131. a.

Ibid. l. 21. Gen. ix. 5, 6.

P. 164. l. 15. *Ibid.* 6.

Ibid. l. 26. Locke, *ut supr.* b. iv. ch. x. §. 9. 12. comp. b. ii. ch. xxiii. §. 35. 36. Wollast. *ut supr.* sect. v. §. 15. p. 88. 93.

P. 165. l. 5. *Id. ibid.* comp. §. 19.

Ibid. l. 9. This observation must be necessarily understood as limited to the method of proof *à posteriori*. By a metaphysician of great acuteness, the mode of demonstration *à priori*, which depends not on a chain of cause and effects, is deemed entitled to a preference, as alone capable of proving the unity of God. See Clarke's Answ. to Lett. VI. on the Being and Attrib. of God. Works, vol. ii. p. 751. Answ. to Lett. VII. p. 756. sq. The method of proof *à priori*, deduced from the consideration of mind as distinct from matter, has been employed by Arn. Eckhard. ap. Leibnit. Commenc. Epist. tom. iii. p. 553. Having shewn, that matter exists not of itself, and that such existence belongs only to mind; from the consideration, that the notion of a most perfect mind involves no contradiction, and that the attribute of being necessarily and being from one's self are the same, and belong to a most perfect mind, he concludes, "ergò mens perfectissima à se necessario seu ipso actu immutabiliter et ab æterno existit." *Ibid.* p. 585. d.

Ibid. l. 13. See Wollast. *ut supr.* sect. v. §. 1. p. 65. sq.

Ibid. l. 15. See Locke, *ut supr.* b. iv. ch. x. §. 16. b. ii. ch. xxiii. §. 15.

Ibid. l. 28. *Id. ibid.* §. 13, 14, 15.

P. 166. l. 24. See Wollast. *ut supr.* §. 14. p. 81. sq. §. 15. p. 87. sq. Hence it is common with Natural Theologians

to take the designation of the Deity from the analogy of the human intellect. Thus Wollaston expresses himself; “there must be *some Almighty Mind*, who models and adorns the world; lays the causes of things so deep; prescribes them such uniform and steady laws; destines and adapts them to certain purposes; and makes one thing to fit or answer another.” *Relig. of Nat.* ut supr. p. 83. c. *Comp. Locke*, ut supr. b. ii. ch. xxiii. §. 15.

P. 167. l. 25. The subjoined objections are deduced from Professor Lawrence, *Lect. I.* p. 6. sq. They constitute the first of the physiological phenomena, to which that lecturer has directed the attention of the students in surgery; when, with a pure and upright view to their advancement, he consulted their *religious* edification, in the dereliction of their professional improvement. In the contrast in which I have placed the French and the English physiologist, whom I have had occasion so often to cite; it may not be deemed irrelevant to add, that it extends to the order in which they have respectively treated the same science; the subject which excites the earliest attention of the native professor being that which receives the latest consideration of the foreign philosopher: *comp. Lawrence*, *ibid.* par. i. p. 6. sq. *Fodéré*, *ibid.* tom. iii. p. 375. sq. And if the reader will be at the pains to estimate their merits, by the ability displayed in the single subject, which Prof. Lawrence selected for the first display of his principles and powers; he will not long hesitate in coming to the conclusion, that his dismissal, for which the public indignation clamoured, was not more fully justified by his religious delinquency, than his scientific incompetence.

P. 168. l. 28. *Voy. Fodéré*, *ibid.* §. 957. 972. tom. iii. p. 378. 405. a. *Butler*, *Analog.* ut supr. par. i. ch. i. p. 41. c.

P. 169. l. 11. *Fodéré*, *ibid.* §. 962. 972. p. 383. 405. *Butler*, *ibid.* p. 13. c.

Ibid. l. 21. *Fodéré*, *ibid.* §. 982. p. 423. c. *Butler*, *ibid.* p. 16. d.

P. 170. l. 8. See Wollast. ut supr. sect. v. p. 88. b. sq. Leibnit. Epist. ad P. Des Boss. tom. ii. p. 288.

Ibid. l. 10. In favor of this opinion not only the sentiments of the ancient fathers, but of the modern philosophers, may be quoted. They have not only rejected the notion of the præexistence of the soul, or its generation with *the body*; but have asserted its distinct creation, and nearly intimated its union with it, at the critical moment of its birth. S. Epiph. adv. Hær. 70. p. 813. sq. S. Hieron. Apol. adv. Rufin. lib. ii. p. 242. g. S. August. de Genes. ad liter. lib. vi. c. 7. col. 201. S. Method. Conviv. Virg. p. 75. Cyril. Alex. de Adorat. lib. x. vol. i. p. 356. Lactant. de Opif. Dei, cap. xix. p. 492. p. 837. Boyle, Christ. Virt. vol. v. p. 45. comp. Bacon. Confess. of Faith, vol. iv. p. 414.

Ibid. l. 18. Gen. ii. 7.

Ibid. l. 23. Ibid. **וּיִפֶּחַ בְּאַפִּי נְשָׁמַת חַיִּים וְגו'**, I am disposed to render **נְשָׁמַת חַיִּים**, “the spirit of life,” which is put, by a common Hebrew idiom, for a *living spirit*, instead of “*the breath of life*,” for the following among other reasons. Moses does not at other times place the vital powers in the respiration, but the circulation. It is, besides, his object on the present occasion to mark the distinction between the human and bestial nature; while it is obvious, that in the act of *respiration* there is no difference between them. The phrase **בְּאַפִּי**, the literal force of which is given in our version, “into his nostrils;” seems intended to mark the union of the soul and body, as taking place when the breath was first respired.

Ibid. l. 27. Job. xxvii. 3.

P. 171. l. 5. Psalm civ. 29. comp. Isa. xlii. 5.

Ibid. l. 9. Voy. Fodéré, ut supr. ch. xi. sect. v. “Com-
paraizon de la vie fœtale avec celle de l’homme adulte.”
tom. iii. p. 215. sq.

P. 172. l. 14. The following observations of an accurate observer of nature, which are no less distinguished by a delicacy of perception, than a soundness of philosophical thinking, are recommended to the perusal of those who may

feel inclined to despise the first essays of the human mind, in employing the natural organs in acquiring instruction. “ Still the infant,” observes Goldsmith, in speaking of the difficulties with which it has to contend in its first efforts, “ is incapable of distinguishing objects ; the sense of seeing, “ like the rest of the senses, requires a habit before it be- “ comes any way serviceable. All the senses must be com- “ pared with each other, and must be made to correct the de- “ fects of one another, before they can give just information. “ It is probable, therefore, that if the infant could express “ its own sensations, it would give a very extraordinary de- “ scription of the illusions which it suffers from them. The “ sight might, perhaps, be represented as inverting objects, “ or multiplying them ; the hearing, instead of conveying “ one uniform tone, might be said to bring up an interrupt- “ ed succession of noises ; and the touch apparently would “ divide one body into as many as there are fingers that “ grasped it. But all these errors are lost in one confused “ idea of existence ; and it is happy for the infant, that it “ can then make but very little use of its senses, when they “ could serve only to bring it false information.” *Hist. of Anim. ch. iii. vol. i. p. 322.* A little lower, however, he thus delivers himself on the extent of its acquirements. “ If we only reflect on the amazing acquisitions that an “ infant makes in the first and second years of life, we “ shall have much cause for wonder. Being sent into a “ world where every thing is new and unknown, the first “ months of life are spent in a kind of torpid amazement ; “ an attention distracted by the multiplicity of objects that “ press to be known. The first labour therefore of the “ little learner is, to correct the illusions of the senses, to “ distinguish one object from another, and to exert the “ memory so as to know them again. In this manner “ a child of a year old has made a thousand experiments, “ all which it has properly ranged and distinctly remem- “ bers. Light, heat, fire, sweets and bitters, sounds soft or “ terrible, are all distinguished at the end of a very few

“ months. Besides this, every person the child knows, every
 “ individual object it becomes fond of, its rattles, or its
 “ bells, may be all considered as so many new lessons to the
 “ young mind, with which it has not become acquainted
 “ without repeated exertions of the understanding. At this
 “ period of life, the knowledge of every individual object
 “ cannot be acquired without the same effort, which, when
 “ grown up, is employed upon the most abstract idea :
 “ every thing the child hears or sees, all the marks and
 “ characters of nature, are as much unknown, and require
 “ the same attention to attain, as if the reader were set to
 “ understand the characters of an Ethiopic manuscript ; and
 “ yet we see in how short a time the little student begins to
 “ understand them all, and to give evident marks of early
 “ industry.” Ibid. p. 327.

P. 172. l. 23. Locke, ut supr. b. i. ch. iv. §. 2. Fodéré,
 ut supr. §. 970. tom. iii. p. 397.

Ibid. l. 30. Leibnit. Epist. ad P. Des Boss. “ Anima
 “ internè quidem sine corporum adminiculo operari potest,
 “ sed non extra. Semper tamen ejus actionibus internis
 “ externa respondent. Equidem per miraculum à Deo
 “ anima constitui potest extra corpus ; sed hoc non convenit
 “ ordini rerum.” Oper. tom. ii. p. 286. cf. p. 266. b.

P. 173. l. 26. See Clarke, 3rd. Def. of Immort. of Soul,
 ut supr. vol. iii. p. 851. c.

P. 174. l. 16. Rev. vi. 9, 10.

Ibid. l. 20. 2 Cor. xii. 2.

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LECTURE V.

P. 178. l. 8. See Butler's Analog. ut supr. par. i. ch. iv.
 p. 67. d. 68. c.

Ibid. l. 27. Gen. ii. 17. So this text may be rendered,
 according to the highest authorities in the Hebrew, among
 the ancients ; St. Jerome observes ; “ In quacunque autem

“die comederis ex eo *morte morieris*. Meliùs interpreta-
 “tus est Symmachus dicens, *mortalis eris*.” Quæst. in
 Genes. p. 452. d. Thus Montfaucon Hexapl. in loc. pre-
 serves, *θνητὸς ἔσῃ*. And with this view of the text, the in-
 terpretation of the most orthodox expositors appears to be
 accordant; vid. S. Athanas. de Incarnat. tom. i. p. 50.
 b. e.

P. 179. l. 21. See note on p. 170. l. 10. p. 162. l. 4.

Ibid. l. 23. Rom. vii. 5, 23, 25.

Ibid. l. 27. S. Ambros. de Paradis. cap. vi. col. 159.

a. b.

P. 180. l. 26. Gen. vi. 11.

P. 182. l. 5. Gen. ii. 25.

Ibid. l. 8. Ib. iii. 7.

Ibid. l. 16. Gen. ibid. 7, 10.

P. 183. l. 5. S. August. de Genes. contr. Manich. lib. ii.
 col. 674. xi. cap. 35. Conf. S. Ambros. ut supr. cap. xiii.
 col. 175. a. c. Expos. Luc. lib. iv. col. 1343. b. Such was
 the consequence with which the participation of the forbid-
 den fruit is represented as having been attended, by a poet
 who was not less distinguished for his profound knowledge
 of Scripture, than his accurate acquaintance with human na-
 ture; see Parad. Lost, b. ix. vs. 1011—1016.

Ibid. l. 28. Rom. vii. 19, 21, 24.

P. 184. l. 17. See Jenyns' Free Enquir. into Orig. of
 Evil, Lett. IV. comp. Johnson's Review. Works, vol. viii.
 p. 48. d. 51. d. sq.

Ibid. l. 22. Vid. S. Ambros. de Parad. cap. vii. col. 159.

P. 186. l. 23. Gen. i. 12. 31.

Ibid. l. 26. Vid. S. Ambros. ut supr. cap. ii. col. 148. b.

P. 187. l. 14. S. Ambros. ibid. cap. vii. §. 36. col. 159. f.

Ibid. l. 17. Jenyns' Free Enquir. ut supr. S. August.
 ut supr.

P. 188. l. 11. Gen. iii. 15.

Ibid. l. 29. Ibid. vi. 3.

P. 189. l. 14. Jenyns' Free Enquir. ut supr. Lett. III.
 Johnson, ut supr. p. 42. comp. note on p. 190. l. 4.

P. 189. l. 29. Gen. iii. 5.

P. 190. l. 4. Vid. Dracont. in Hexaem. p. 899. Gregor. Nazianz. Orat. xlii. p. 681. Theodor. Quæst. in Genes. 40. p. 36.

Ibid. l. 8. Gen. iii. 22, 23.

P. 191. l. 10. Vid. Burnet. de Fid. et Offic. cap. vi. p. 101. d. 106. c.

P. 192. l. 8. The errors and failures of moralists, in reasoning on the origin and prevalence of evil, have arisen from the nature of the subject; that perfection, which is alone compatible with an absolute and independent state, having been sought in one which is relative and partial. It is thus little wonderful that inexplicable difficulties should have been encountered, not merely in determining the essence of virtue and vice, but in reconciling the moral government and attributes of the Divinity. If the Divine Economy forms one consistent scheme—in the consideration of which, not only this life is included but a future,—and in which man is regarded not merely as placed in a moral and social state, but in a religious and probationary; it is obvious that when our views take in but a part of it, they are liable to great imperfection and error. If the perfection of this scheme, as is not improbable, depends on its consistency as a whole; it cannot be supposed to belong to the parts separately considered, without a palpable contradiction. Under any other view of the subject, the necessity of Revealed Religion would be precluded, by the adequacy of Ethical Science; as there could be no need for preternatural guidance, where natural light was sufficient for our direction. In combating the difficulties, in which the question of the origin of evil is involved; the necessity of applying to Revelation, for a solution, has been implicitly if not expressly admitted by those writers, who have attained most success in removing them; vid. Lactant. Div. Instit. lib. iii. cap. xxvii. conf. cap. vii. x. xii. Jenyns' Free Enquir. ut supr. Lett. IV. Johnson's Review, ut supr. p. 52. d. 55. c.

P. 192. l. 14. 2 Cor. iv. 17.

P. 193. l. 4. In support of the great longevity of the patriarchs, has been cited the authority of the ancient compilers of the Egyptian, Chaldean, and Phenician antiquities; Manetho, Berosus, Mochus, Histiaëus, and Hieronymus Ægyptius; Hesiod, Hecataëus, Hellanicus, Acusilaus, Ephorus, Nicholas Damascenus: vid. Joseph. Antiq. lib. i. cap. iv. p. 11. c. d. Euseb. Præp. Ev. lib. ix. cap. xiii. p. 415. d. To these Pliny and Varro may be added from among the Romans: vid. infr. note on p. 196. l. 27.

Ibid. l. 23. Vid. Burnet. Archæol. lib. ii. cap. iv. p. 474. d.

P. 194. l. 9. In the age ascribed to the ten patriarchs preceding the flood, the Hebrew, Samaritan, and Septuagint correspond, with the exception of the single case of Methuselah. They accordingly agree in ascribing to Adam 930 years, to Seth 912, to Enos 905, to Cainan 910, to Mahalaleel 895, to Jared 962, to Enoch, at his translation, 365, and to Noah, at the flood, 600; but to Methuselah, the Hebrew assigns 969, the Samaritan 720, and the Septuagint 696. The various readings, in the last instance, have obviously arisen in the endeavour to accommodate his age to the date of the Deluge; which was determined by the six hundredth year of Noah. As he was not among the persons who were saved from the flood, his life could not be consistently prolonged beyond that epoch.

Ibid. l. 29. The authorities which assert, that the Egyptians employed seasons for years, in computing the fabulous period, are numerous and explicit. Diodorus Sicul. lib. i. p. 22. al. 15. d. *Μυθολογοῦσι δὲ [οἱ Αἰγύπτιοι] καὶ τῶν Θεῶν τοὺς ἀρχαιοτάτους βασιλεῦσαι πλείω τῶν χιλίων καὶ διακοσίων ἔτων, τοὺς δὲ Μεταγενεστέρους οὐκ ἐλάττω τῶν τριακοσίων. . . . Παραπλήσια δὲ λέγουσι καὶ περὶ τῶν τριακοσία ἔτη δοκούντων ἄρξαι. Κατ' ἐκείνους γὰρ τοὺς χρόνους, τὸν ἐνιαυτὸν ἀπαρτίζεσθαι τέτταρσι μηνὶ, τοῖς γενομένοις κατὰ τὰς τῶν χρόνων ὥρας, οἶον ἔαρος, θέρους, χειμῶνος.* Conf. Plutarch. Vit. Num. p. 72. Censorin. cap. xix. Solin. Polyhist. cap. i. p. 4. b. S. August. de Civ. Dei, lib. xii. cap. x. From the natural

division of the year into four seasons, and its positive division, not only by Moses and the Egyptians, but by the Greeks, into so many parts, there can be little doubt that the Egyptian year consisted of three months; vid. Gen. viii. 22. Plut. de Isid. et Osir. cap. lii. Diodor. Sic. ut supr. p. 23. al. 16. a. Syncel. Chronogr. p. 41. c. Salmas. Plinian. Exercit. col. 640. e. Scalig. Emend. Temp. lib. iv. p. 247. a. Pliny and Suidas, in summing up the different species of year, are accordingly right in representing those derived from the seasons, as composed of three months, not of four; Nat. Hist. lib. vii. cap. xlviii. “Annum enim alii æstate unum determinabant, et alterum hieme; alii *quadripartitis temporibus*, sicut Arcades, quorum anni *tri-mestres fuere*; quidam lunæ senio, ut Ægyptii, itaque apud eos aliqui et singula millia annorum vixisse produntur.” Suidas, speaking with reference to the fabulous period of the Egyptians, observes; οἱ μὲν τὰς ἡμέρας ἐνιαυτοὺς ἐψήφιζον· οἱ δὲ τὰς περιόδους τῆς σελήνης· ἕτεροι δὲ τοὺς ὀκαιρούς. sub voc. ἥλιος. There can be little reason to doubt, that, out of the division, which Pliny terms *quadripartita tempora*, ἐνιαυτὸς τετράμηνος has arisen by mistake for ἐνιαυτὸς τετραμερής; the distribution being improperly taken with reference to the months, instead of the years. The facility of the substitution may be easily seen from the following passage of Plutarch, Vit. Num. ut. supr. Αἰγυπτίοις δὲ μηνιαῖος ἦν ὁ ἐνιαυτὸς εἶτα τετράμηνος ὥς φασι: from whence it appears that the substitution is of long standing. But by the authority of Panodorus, confirmed by the Egyptian festivals, the point seems to be placed beyond dispute: vid. note to p. 196. l. 22.

P. 195. l. 19. Various circumstances in the history of Hermes, who was held in such high repute by the Egyptians, tend to prove that he was of foreign extraction. He is not merely represented as having fled into Egypt, but as having come into that country from Phenicia; vid. Lactant. Div. Inst. lib. i. cap. vi. Sanchon. ap. Euseb. Præp. Ev. lib. i. cap. x. p. 39. b. In the name and inventions which

he is ascribed, his country seems to be more fully identified. The appellation *Hermes*, by which he was known to the Greeks, was adopted from the Egyptian *Armais*; vid. Censorin. cap. xix. et Lindinbrog in loc. which must be ultimately referred to אַרְמַי, *armai*, i. e. Syrian, which with a Greek termination, forms *Armais*. “Ægypto præfuisse,” observes Cicero, “atque Ægyptiis leges et litteras tradidisse: “hunc Ægyptii Thyoth appellant, eodemque nomine anni “primus mensis apud eos vocatur.” De Nat. Deor. lib. iii. cap. lvi. conf. Diod. Sic. lib. i. p. 14. al. 10. b. The name *Thuoth* signifies in Coptic a pillar; (vid. Jablonsk. Pantheon. Ægypt. lib. ii. p. 180.) as the Egyptians not only referred their learning to *Thuoth*, but inscribed it upon pillars; (vid. Brucker. Hist. Phil. tom. i. p. 263. d. 268. d.) the name might have been in this manner acquired. The inventions of letters and of astronomy as properly ascribed to the Assyrians, seem further to identify *Thyoth* as originally an Assyrian; vid. Plin. Nat. Hist. lib. vii. cap. lvi. Cicer. de Divin. lib. i. cap. i. It has been already observed of him, that he flourished in the times of Joseph: see note on p. 94. l. 23. As a singular confirmation of the accuracy with which his age has been determined, the discovery of the Egyptian solar year, ascribed to him by Censorinus, may be adduced; and the place which the neomenia, or new year’s day, of the erratic year, which was termed after him, occupied at that period. In the year J. P. 3003. B. C. 1711, to which he is referred, that day fell upon Oct. 25th, vid. Scalig. Canon. Isagog. lib. i. p. 97. sq. It was thus coincident with the day, from which the beginning of the first year of the world was computed, according to the Hebrew mode of reckoning: which takes the beginning of the day from the preceding evening; vid. Gen. i. 5. and note on p. 85. l. 8. Is this coincidence, I would ask, to be imputed to accident, or to the preservation of that date, among the people to whom Joseph was allied, and from whom Moses was descended? Comp. Jul. Firmic. Mathem. lib. iii. præf. see note on p. 96. l. 6.

P. 195. l. 25. Diodor. Sic. ut supr. lib. i. p. 14. al. 10. b. Censorin. ut supr. Plato in Phædr. p. 1240. a. The notion that Hermes and Joseph were identical has been espoused by Gale; Court of Gentiles, b. ii. ch. iv. p. 45. It is fully borne out, not merely by the name and era, but by the attainments and avocations, respectively assigned to them by sacred and profane writers. It is asserted of Joseph not less plainly than of Hermes, that he was a Syrian, and a refugee from Phenicia; and that about the year B. C. 1711, he presided over Egypt; comp. Deut. xxvi. 5. Gen. xli. 41, 42, 43. Usser. Annal. p. 15. If he was not the author of the astronomical discoveries, which Abraham was supposed to have imparted to the Egyptians; he cannot be supposed to have been unacquainted with them; vid. Alexandr. Polyhist. fragm. ap. Euseb. Præp. Ev. lib. ix. cap. xvii. p. 419. c. Jul. Firmic. ut supr. lib. iv. præf. Syncel. Chronogr. p. 98. b. 312. c. The scene of this part of the great Hebrew patriarch's history, as fixed at Heliopolis, the intercourse into which it was said he entered with the priests, and other circumstances in which he is represented as engaged, leave little ground for doubt, that, in consequence of his journey to Egypt, he has been confounded with his great grandson, Joseph; who allied himself to the priestly order and settled in that city; see Gen. ibid. 45. conf. Nichol. Damasc. fragm. ap. Euseb. Præp. Ev. ut supr. cap. xvi. p. 417. c. d. Alexandr. Polyhist. fragm. ut supr. p. 419. c.

P. 196. l. 15. The names of the Egyptian demigods are preserved by Syncellus. Chronog. p. 41. b. They amount to nine, and correspond in number with the antediluvian patriarchs antecedent to Noah, as interposed between the last dynasty of the gods, which closed with Typhon, and the first dynasty of mortals which commenced with Menes; conf. Syncel. ibid. p. 18. c. p. 91. d. This last named monarch, who is generally identified with Menu of the Hindus, is asserted by the common voice of historians and chronologists to have first reigned in Egypt: "Extra controversiam positum est," observes Marsham, "Menen

“fuisse primum Ægypti regem. Hoc Herodotus et Diodorus Siculus; hoc Eratosthenes, et ex Manethone Africanus, et Eusebius uno ore prædicant.” Chron. Can. p. 22. He adds shortly after, “vixit Menes, Nohæ synchronus, temporibus Diluvio proximis.” Ibid. From the tenor of the Egyptian chronology, as digested according to the great Lunisolar period, it appears, that Menes reigned between the years of J. P. 2041. B. C. 2673. and J. P. 2103. B. C. 2611: and that he was consequently, as Marsham declares, contemporary, if not identical with Noah. Much of the patriarch’s history was however ascribed to Osiris, whose accession is placed, according to the same chronology, in J. P. 1763. B. C. 2951. According to the computation of Ussher, Noah’s birth is placed but three years later; having occurred in J. P. 1766. B. C. 2948. Annal. p. 3.

P. 196. l. 18. The names of the ten Chaldee princes, from Alorus to Xisuthrus, are preserved from Berosus, Abydenus, and Apollodorus by Syncellus, Chronogr. p. 18. p. 38. c. p. 39. b. They are identified with the antediluvian patriarchs, by Cyril. Alexandr. contr. Julian. lib. i. cap. viii. Cosmas Indicopl. lib. xii. cap. i. iii. All the circumstances related of Xisuthrus’s preservation from the Deluge, in an ark, correspond with the history of Noah.

Ibid. l. 22. The times of the gods’ successors, who, as we have seen, were the demigods, was computed, according to Diodorus Siculus, by seasons; vid. supr. note to p. 194. l. 29. In conformity to his testimony, it is positively asserted by Panodorus, a learned Egyptian Chronologist, that his compatriots computed the times of the demigods, who, as has been likewise observed, corresponded with the antediluvian patriarchs, by periods termed *ᾠποι*, which consisted of *three months*; vid. Syncel. ut supr. p. 40. d. In computing the year in the time of that dynasty at this length, this testimony is confirmed by the subsequent division of the natural year by the Egyptians into seasons; the length of which cannot be mistaken, as they had their commencement respectively marked by festivals, that corresponded with the

entrance of the sun into the equinoctial and solstitial points; vid. Plutarch. de Isid. et Osir. cap. lii. cf. Scalig. Emend. Temp. lib. iv. p. 247. a. In reconciling Panodorus's authority with that of Diodorus; as the chronologist's testimony cannot be accommodated to the historian's, but the historian's may be easily accommodated to the chronologist's; little hesitation can be felt in determining which should be altered. As the matter of *fact* stated by Diodorus, ἐνιαυτὸν ἀπαρτίζεσθαι κατὰ τὰς τῶν χρόνων ὥρας, "that the [civil] "year was completed according to the seasons of the [natural] years," is determined by the entrance of the sun into the cardinal points, with which the rise and fall of the Nile corresponded; by it, the error in *circumstance*, which he adds, and which might easily arise from the substitution of ἐνιαυτὸς τετράμηνος for τετραμερῆς, should be necessarily corrected: see note to p. 194. l. 29.

P. 196. l. 27. The expediency of applying this principle to account for the patriarchal longevity has been indeed admitted by the most learned of the ancients; although they erred in determining the species of year, by which their ages were to be reduced to the natural standard. Thus Pliny, as already cited, referring to the shortest measure of the year, observes; "quidam lunæ senio [annum determinabant], ut Ægyptii; itaque apud eos aliqui et singula "millia annorum vixisse produntur:" ut supr. note to p. 194. l. 29. And Varro delivers himself to the same purpose, as cited by Lactantius; "Sic facta hominis vita est "temporaria, sed tamen longa, quæ in mille annos propagaretur. Quod divinis literis proditum, et per omnium "scientiam publicatum cùm Varro non ignoraret; argumentari nixus est, cur putarentur antiqui mille annos "vixitasse. Ait enim, apud Ægyptios, pro annis menses "haberi," &c. Divin. Instit. lib. ii. cap. xii. Where it is observable, that both writers, in contending that the patriarchal ages should be reduced, coincide with the Scriptures, in estimating them at a thousand years.

P. 197. l. 10. The period of the patriarchs' paternity,

and the length of their ages, as computed according to the Hebrew text, may be thus expressed, in years and seasons.

	Paternity.		Age.	
	y.	s.	y.	s.
Adam	32.	2.	232.	2.
Seth	26.	1.	228.	0.
Enos	22.	2.	225.	0.
Cainan	17.	2.	227.	2.
Mahalaleel	15.	0.	223.	3.
Jared	40.	2.	240.	2.
Enoch	16.	1.	91.	1.
Methuselah	46.	3.	242.	1.
Lamech	45.	3.	194.	1.
Noah	125.	0.	237.	2.

It is however not improbable, as the date of Jared and Methuselah's paternity is accurately determined in the Septuagint; that the Hebrew, which rates that of Mahalaleel and Enoch but at 65 seasons, should be corrected by it, and raised to 165: the time of their paternity will be thus fixed at 41 years 1 season. This emendation is rendered more probable in consequence of the facility with which a numeral might have been inadvertently dropped in the Hebrew text. There is however no physiological objection to prevent the present reading from being retained. Vid. Bochart. Epist. ad N. Carbon. Oper. tom. i. col. 920. sq.

P. 197. l. 26. Thomas Carn, according to the parish register of St. Leonard, Shoreditch, London, died Jan. 28th, 1588, aged 207 years. Henry Jenkins died Dec. 8th, 1760, aged 160 years. See note to p. 206. l. 13.

P. 199. l. 14. The Chaldees, who were the most ancient observers of the heavens, distinguished in them four points, which they termed generally centres; and which answered to the orient, the midheaven, the setting, and the subterranean points. The last of these as opposed to the *μεσοῦράνημα*, or midheaven, they termed also *ἀντιμεσοῦράνημα*: vid. Sext. Empiric. adv. Math. p. 112. According to the observance or computation of the principal constellations in these points, the seasons were easily determined.

P. 199. l. 25. See Job ix. 9. Whatever difficulty has been experienced in identifying the particular constellations mentioned by Job; it is agreed that he distinguishes *four*, and applies them to the distribution of the *year into seasons*. “Sed enim Hebræo Mazaroth vocabulo Zodiaci constellationes significari, cùm docet Jobi lectio, qua ipsum loqui eo sanè loci de *anni tempestatibus*, deque zodiaci *signis Pleiadum*, Latinis Vergiliarum, *Scorpii*, &c. liquet; tùm communis ita se habet interpretum opinio, Chaldæi Paraphrastæ, R. Salomonis Isaki, Talmudistarum universim in Tract. Berachoth. fol. 58. quorum aliis est cauda Arietis, aliis *caput Tauri*, Suidæ quoque Lex. t. ii. p. 481. Pagnini, Schindleri in Lex. Heb.” &c. A Benetti, Chron. et Crit. Hist. par. i. tom. i. cap. ii. §. 20. p. 442. d. If any reliance may be placed on this interpretation, and the Pleiades, or head of Taurus, and Scorpio are identified in the constellations mentioned by Job; there can be little reason to doubt, that the signs termed *fixed* by the Chaldees, which consisted of Taurus, Scorpio, Leo, and Aquarius, must be intended in the patriarch’s description: vid. Sext. Empiric. ut supr. p. 112. It would seem from ch. xxxviii. 31, 32. that the appearance of the vernal fruits was coupled with the observation of Kimah, and of the autumnal with that of Kesil. Where Job speaks of “the chambers of the south,” ibid. ix. 9. and of “bringing forth Mazaroth in his season.” ib. xxxviii. 32: the allusion to “the subterranean point” of the Chaldees, is obvious from the mere phraseology.

P. 200. l. 6. Vid. Syncel. ut supr. p. 41.

Ibid. l. 10. Vid. Scalig. Canon. Isagog. lib. iii. p. 236. c. Dodwel. de Cycl. dissert. iii. §. 7. p. 124.

Ibid. l. 17. Vid. Petav. Rationar. Temp. par. ii. lib. i. cap. i. conf. Scalig. Emend. Temp. lib. vii. p. 638. b.

Ibid. l. 26. Vid. Scalig. Can. Isagog. p. 286. Petav. ut supr. par. ii. lib. ii. cap. 1.

P. 201. l. 4. The course of time to the Deluge, computed by the succession of patriarchs, amounts to 1656 years; vid. Scalig. et Petav. ibid. If these years are considered seasons

of three months; it will be necessarily reduced to one fourth, and of course amount to no more than 414 years.

P. 201. l. 18. According to the ordinary computation of the antediluvian years, Adam was a hundred and thirty years old on the birth of Seth; and Noah five hundred on the birth of Shem, Ham, and Japhet; with whom and their wives he entered the ark, when he was six hundred. If it be supposed, that Abel was thirty at the time of his death; a hundred years must have thus elapsed before his loss was compensated by the birth of Seth. In like manner, at the age of a hundred and upwards, Shem, Ham, and Japhet, though married, must have entered the ark childless. On adopting the proposed method of computation; by which Adam is made thirty-two on the birth of Seth, the compensation for the loss of Abel might have occurred the following year. In the same manner, but twenty-five years elapsed between the birth of the last of Noah's three sons and their entrance into the ark. As they entered it, when about twenty-five, it may be conceived, without any violation of probability, that they were then without children.

The inconsistencies which the postdiluvian chronology presents, according to the received mode of computation, are not less extraordinary than the preceding. Abraham, we are assured, at the age of a hundred and seventy-five died "in a good old age;" Gen. xv. 15. xxv. 7, 8. Yet but two years before he was born, Noah had reached six hundred years; and when he was seventy-five, Shem had already attained five hundred and twenty-five years. If, on the contrary, the age of those two patriarchs who preceded the flood be reckoned, according to the antediluvian mode of computation, by seasons instead of years, the length of their ages will be not merely reduced, but the date of their deaths thrown back, so as to remove all inconsistency.

The disparity between the period of paternity, and the length of a generation, before and after the flood, is involved in no less difficulty. In the latter era, it is reckoned from

thirty to thirty-five years, even in the case of those patriarchs who are represented as having lived to nearly five hundred, and in one instance to six hundred: see Gen. xi. 10—17. But in the former, it is asserted of the patriarchs, according to the common mode of computing, that they did not become fathers, until they were past a hundred and sixty. The difference in the mode of computing in both eras, for which I contend, being allowed; the inconsistency not only disappears, but in both, the period of paternity and the term of a generation are rated at what may be conceived in all ages the natural standard. Cf. A Bennett. ut supr. par. i. tom. vi. proleg. x. §. 8, 9. p. 369. sq. While this observation determines against the pretensions of the Samaritan and Septuagint schemes of chronology, in which the term of a generation is protracted to an inordinate extent, particularly after the flood; the Hebrew scheme derives confirmation from the system of Egyptian chronology, in which the dynasty of the demigods is computed by generations of an ordinary and natural length. Cf. Syncel. ut supr. p. 41. b. If in fact we apply to the different schemes of Scripture chronology this principle, by which it has appeared to a great authority, the discrepancies in the ancient chronology may be reconciled; on taking the succession of the generations, at that length which must be deemed the most natural, the comparison will not only terminate in establishing the exclusive authority of the Hebrew, but in confirming that length of year, by which I contend, the antediluvian era should be computed.

P. 201. l. 29. The date of the accession of the gods, in which the earliest dynasty of the Egyptian chronology commenced, as deduced by Panodorus from Manetho, is preserved by Syncellus; ut supr. p. 32. c. 40. d. 41. b. The substance of his testimony is thus stated by Marsham: “Existimans *deorum annos fuisse lunares*, . . . commenta “ista fuisse S. Scripturæ satis consona demonstrare contendit. Ab Adamo statuit *tempus ἀβασίλευτον ἀννο-
rum 1058: eo mundi anno οἱ Ἑγρήγοροι κατήλθον*. Ex-

“inde dicit *annos lunares* 11985 qui *diis* attribuuntur
 “conficere annos solares 969; et *semideorum* ὁποῦς, sive
 “*trimestres annos*, 858 facere annos solares 214 cum dimi-
 “dio. Eo modo componitur numerus annorum 2242 quot
 “scilicet fuerunt secundum Græcam Bibliorum versionem, *ab*
 “*initio rerum* ad Diluvium.” Can. Chron. p. 12. b. The
 date of the descent of the Egregori to earth, A. M. 1058,
 who first taught mankind the true length of the year, is
 thus made the proper epoch of the Egyptian fabulous pe-
 riod: vid. Syncel. *ibid.* p. 16. d. 41. b. This event, which is
 identified with the intermixture of the race of Seth and
 Cain who united themselves with the daughters of men,
 thus appears to be of no less importance in the Septuagint
 than the Egyptian chronology. If the preceding statement
 of Panodorus be admitted, it fully reveals the source of the
 deviation of the Greek version from the Hebrew original, in
 advancing the date of the Deluge from A. M. 1656 to
 A. M. 2242: the revisers of Ptolemy having aimed in the
 alteration at accommodating the Scripture to the native
 chronology.

The same date is, however, of no less importance in the
 Hebrew, and as we shall soon see, in the Chaldee chro-
 nology. From A. M. 1056, which the original text identi-
 fies with the birth of Noah, the remarkable period of 600
 years is computed to the date of the Deluge; which from
 the addition of these two sums, is placed in A. M. 1656. See
 Gen. vii. 11. comp. Usser. *Annal.* ad A. M. 1056. 1656. In
 the Hebrew text the same event is connected, as in the
 Greek version, with the intermixture of the descendants of
 Seth and Cain; from which union it was supposed the race
 of giants proceeded. Gen. vi. 2, 4.

In the Chaldee chronology, as interpreted by Fourmont,
 the two periods of 1056 and 600 years, are assigned an
 equal importance. According to him, the latter sum ex-
 presses the number of years in the 120 sari, which Berosus
 assigns to the succession of ten princes, who preceded the
 Deluge; every saros amounting to five solar years. Taking

the close of the last reign, which extended to 10 sari, or 50 years, from the last year of Adam, in A. M. 930; he thence ascertains the epoch of the ten reigns in A. M. 880: and, as they extended to 600 years, fixes their close in A. M. 1480. On deducting from this date the last reign, amounting to 18 sari, or 90 years; the accession of Xisuthrus the last prince, who has been identified with Noah, is placed by him in A. M. 1390. He hence concludes; “Noachus reg-
 “nare cœpit A. M. 1056 juxta Moysem, anno 1390 juxta
 “Berosum, quo sanè anno Noachus ætatis erat annorum
 “234; quibus annis 234 additi regni anni 90 efficiunt an-
 “nos 324; quibus ab annis 1390 detractis, reliqui sunt
 “*anni 1066 usque ad Noachi natalem*: itaque differentia
 “est annorum 10, qui amplius a Beroso quàm a Moyse
 “positi sunt.” A Bennett. ut supr. p. 440. It had been
 previously observed;—“Inde ab A. M. 1480 [quo finiunt
 “sari] descendendo usque ad annum 1656, quo Diluvium
 “occepit, reliqui sunt anni 176: quod tempus Beroso,
 “Abydeno et Apollodoro fuit *anarchiæ*, sive tempus quo
 “turbæ inter Guibborim et Elohim, sive Aloides dictos
 “aliis, tot ac tantæ fuere.” Id. ibid.

It may be concluded, therefore, that an epoch,—nearly coincident with the year 1056 from the Creation, and from whence 600 years were computed to the Deluge—was preserved among the Egyptians. With that date the discovery of the true length of the solar year was also connected; the knowledge of which must have necessarily contributed to its accurate preservation among that people, who might have derived it from Joseph. From that epoch, as it equally appears, that they computed the succession of gods and demigods; it is obvious they were acquainted with two races analogous to the different lines of Seth and Cain, who are alike contradistinguished in the alliance, recorded in Scripture, of “the sons of God with the daughters of men.” They were no less right in supposing that the latter of those races had ended in a person named Hamon; the patriarch Ham, from whom they were descended, having been the

last of the line of antediluvian patriarchs, with whom, as we have seen, the demigods coincided: *conf.* Marsham, *ut supr.* p. 11. d. p. 30. b. Nor were they unacquainted with the name of Seth; although with the prejudices natural to pagans, they confounded him with the apostate race, who had rendered themselves infamous by their impiety; *vid.* Plut. *de Isid. et Osir.* cap. xlix. p. 520. al. 371. f. *cf.* cap. xxiv. p. 474. al. 359. e. cap. xxv. p. 478. al. 360. f. In the same spirit, they deduced the epoch of their fabulous history from the time when the mixed race of Sethites and Cainites acquired the ascendancy; having no knowledge of the antecedent period, or deeming it less worthy their attention.

P. 202. l. 15. As many able and pious expositors of scripture have admitted, that dislocations have taken place in the inspired text; it is not impossible that from the line of Seth, that of Cain has been separated, and consigned a place in the preceding chapter. The two lines had been for some time intermixed, and were at length indiscriminately swept away in the Deluge. It is, therefore, not improbable, that, from the time of the confusion, that of Seth, as no longer distinguishable, has been discontinued. The circumstances of the history of Lamech, who traced his descent from Cain, seem to mark the point where the genealogical chain was interrupted; the identity of his name with that of Noah's father having suggested the means of its reunion, in the present continued succession from Adam to the Deluge.

P. 203. l. 4. It must be admitted, that the true date of the Deluge is properly determinable from the patriarchal successions, as they now stand deduced in the Hebrew text from Adam to Noah; and that it is thus correctly placed 1656 years from the Creation. In granting that the sacred text has undergone a luxation, and that a totally new principle has been applied for the computation of the course of time; it may be concluded, from the general practice observed by the inspired writers, that its lapse was determined,

by stated periods; see *Exod.* xii. 40, 41. *1 Kings* vi. 1. Evidence is not wholly wanting, that this practice had been also observed, in the period of the sacred history which is antecedent to the Deluge; see *Gen.* vi. 3. vii. 11. It is not improbable, that the nature of the periods, by which the progress of time was determined, had become ambiguous from the variation in the measures by which it was reckoned; and that the inconvenience which was consequently felt, led to the substitution of a more simple and intelligible mode of computation by the patriarchal genealogies in a continued succession. It may be atleast concluded, from the circumstantial minuteness with which those genealogies are detailed, with no apparent object but that of marking the exact course of time; that they were so disposed, in every modification which they received, as to determine what was considered its true progress. To this purpose they might be accommodated, by the alteration of the term of a single life; the precise length of which it could be of no importance to preserve with exactness. Let it be, for example, supposed, that in disposing the present genealogical succession, the sum of the patriarchs' ages was found to exceed, by six years, the number of years to the Deluge; on reducing the time of Lamech's paternity from 188 years, as stated in the Septuagint, to 182, as it now stands in the Hebrew, the just number of years would be determined, and the true epoch assigned to the Deluge. Alterations to this extent, it cannot be denied, have positively arisen in one or more of the three schemes of chronology, which are claimants for our adoption, and which have respectively had their advocates among the learned. On limiting our attention to the instance of the single patriarch who has been mentioned; in two of the three schemes, the last figures expressing his age must have been altered; what the Hebrew computes at 82, being reckoned as 88 in the Septuagint, and as 53 in the Samaritan. When the numerous and immense differences between these chronological schemes are considered; the few alterations in the original text, which

may be necessary to the establishment of the present hypothesis, will not be rejected as improbable.

The gross inconsistencies which arise, on considering some of the ages of the patriarchs, who lived *after the flood*, as correctly given; places it beyond mere probability that they also have been altered. Of such incongruity several examples have been collected by Dr. Wills, and may be seen in the Appendix to his discourse on the Chronology of Josephus: so wholly irreconcilable have they been found with probability, that they have induced many of the learned to reject the entire scheme of Hebrew chronology and to adopt the Samaritan. Without recurring to so summary and violent a method of cure, the evil may be remedied by correcting *three* of the ages which have been raised above the natural standard. The notion that the term of human life before the flood was expressed in solar years, easily induced the supposition, that its reduction to the ordinary period was gradual. Hence in expressing three of the earlier patriarchs' years, "*four* hundred years" has been apparently substituted for "*two* hundred." And to this alteration, it is probable, the facility with which the change might be made, may have partly contributed; as by the mere substitution of $\aleph$, for $\beth$, it might be effected. If this correction of the Hebrew text be admitted, the immense disparity between the ages of mankind, before and after the flood, will be reduced to the difference in the mode of computing: the course of time having been measured by seasons at one time, and by years at the other. Of the corrections which are here suggested, it should be at the same time observed, that they do not in the least affect the scheme of scripture chronology; as they merely apply to the whole term of the patriarchs' lives, while it is exclusively built on the term of their paternity, which needs no emendation in the Hebrew.

P. 204. l. 8. Voy. Fodéré, ut supr. ch. x. sect. i. tom. iii. p. 108. sq. sect. ii. p. 117. sq.

P. 205. l. 23. Id. ibid. §. 718. sq. p. 122. sq.

P. 206. l. 13. Of the family of Parr, who furnish some

of the most remarkable instances of longevity, Thomas died Nov. 15, 1632, aged 152; his son lived to 113; his grandson Robert to above 109; and his great-grandson Robert died August 1757, aged 124 years. Comp. Fodéré, ut supr. §. 1013. tom. iii. p. 465.

P. 206. l. 19. Fodéré, ut supr. §. 719. p. 123.

P. 207. l. 11. Luigi Cornaro.

Ibid. l. 19. Voy. Fodéré, ut supr. §. 25. 29. tom. i. p. 24. 27. §. 709. tom. iii. p. 112. et p. 120. n. *.

P. 208. l. 11. Id. ibid. §. 108 “ Dans le fait, nous ne
 “ pouvons nous refuser à l'idée, qu'avec du sang, les artères
 “ ne contiennent aussi de l'air ou un gaz quelconque, ca-
 “ pable d'agir sur elles, comme excitant, et de les distendre,
 “ lorsqu'il est dilaté par le calorique, et que *la pression de*
 “ *l'air extérieur est moindre*. Quelque soit le mérite des
 “ expériences desquelles il résulte que l'introduction de l'air
 “ dans nos vaisseaux est mortelle, les phénomènes de la vie
 “ prouvent qu'un *fluide gazeux y circule réellement* avec
 “ les humeurs: le sang artériel est léger, écumeux, et a
 “ beaucoup de volume sous peu de masse; il paroît aussi
 “ plus chaud que le sang veineux, qui, dans beaucoup de
 “ circonstances, forme pareillement l'écume au moment où
 “ on le tire: d'où vient cette écume, n'est-elle pas due *au*
 “ *dégagement d'un gaz* contenu dans le sang?” tom. i. p.
 107. “ Ce n'étoit donc pas tout-à-fait sans fondement que
 “ les pères de l'art avoient désigné par le nom d'artères,
 “ canaux qui contiennent *de l'air*, les vaisseaux dont nous
 “ nous occupons. Ce fluide, ou tel autre *gaz*, y est renfermé,
 “ partie en état de combinaison, partie comme mélangé, et il
 “ est présumable qu'il a une distension convenable *qui ré-*
 “ *siste à la pression de l'atmosphère* avec laquelle il *se met*
 “ *en équilibre*. Il s'unit et se mélange avec les humeurs
 “ constitutives du sang, et forme de nouveaux composés, au
 “ milieu des agitations, des mouvemens, et des opérations de
 “ l'action vitale pour la préparation de ce liquide singulier
 “ auquel nul autre ne ressemble.” Ibid. p. 108.

P. 209. l. 15. 1 Cor. xv. 21, 22.

P. 209. l. 23. Ibid. 49.

P. 210. l. 3. Ibid. 50.

Ibid. l. 11. Voy. Fodéré, ut supr. §. 728. tom. iii. p. 136. comp. §. 370. tom. ii. p. 91. §. 822. tom. iii. p. 233. Introd. p. xxxvi.

Ibid. l. 18. 1 Cor. vi. 13.

P. 201. l. 11. Fodéré, ut supr. Introd. p. xxxvii. sq.

Ibid. l. 23. Fodéré, ibid. “ En effet, il est évident que l'action de certains organes, tels que *le cerveau, le cœur, et les poumons*, (à quelques exceptions près pour ces derniers,) ne sauroit être interrompue *sans la cessation de la vie* ; il est aussi très-évident que les fonctions de ces organes sont étroitement enchaînées l'une à l'autre : tellement que si l'une d'elles est suspendue, celles du cerveau, par exemple, le cœur et les poumons *n'agiront plus, et réciproquement*. Au contraire, la nutrition, les sécrétions, et les excrétions, qui appartiennent aux fonctions connues sous *le nom de naturelles*, peuvent être interrompues quelque temps, *avec la conservation de la vie*.”

P. 212. l. 7. Id. ibid. §. 176. tom. i. p. 169. conf. §. 171. p. 162.

Ibid. l. 21. Id. ibid. §. 184. p. 177. “ *Le sang est le principal excitateur du cœur*, dès l'instant que ce viscère est entré en fonction ; et comme jamais une des moitiés du cœur n'est vide de sang, il en résulte que la présence de ce liquide *produit constamment les alternatives de mouvement et de repos, tant que dure la vie*, alternatives d'autant plus fréquentes que la circulation se fait dans des temps plus courts. Divers phénomènes prouvent cette puissance du sang,” &c.

Ibid. l. 27. Id. ibid. §. 373. tom. ii. p. 94. §. 377. p. 101.

P. 213. l. 6. Id. ibid. §. 423. p. 143. §. 377. p. 101.

Ibid. l. 21. Gen. ix. 4.

Ibid. l. 29. Lev. xvii. 11.

P. 214. l. 8. Fodéré, ut supr. §. 183. tom. i. p. 177. c.

Ibid. l. 22. Id. ibid. §. 188. p. 184. §. 184. p. 177. d.

P. 214. l. 29. Lev. xvii. 11.

P. 216. l. 7. 1 Cor. xv. 42—44.

Ibid. l. 23. Locke on Understand. b. ii. ch. xxvii. §. 10. 16.

P. 217. l. 3. See Butler, Diss. i. on Pers. Ident. p. 326. a. b. p. 327. d.

Ibid. l. 26. Id. ibid. p. 327. c. p. 329. c.

P. 218. l. 17. 1 Cor. xv. 42. 44.

P. 219. l. 7. See Butler, Analogy, par. i. ch. i. p. 15. d. Fodéré, ut supr. Introd. p. lvii. b.

Ibid. l. 16. Id. ibid. p. xxxvii. d. xxxviii. a.

P. 22. l. 3. See Johns. Review of Jenyns' Inquir. into Orig. of Evil, ut supr. p. 41. 44. 46. 56. 58. 60.

LECTURE VI.

P. 224. l. 5. 2 Cor. iv. 18.

Ibid. l. 11. 2 Pet. iii. 4.

Ibid. l. 29. Ibid. 6.

P. 225. l. 26. Ibid.

P. 226. l. 13. See p. 100. and note on p. 100. l. 5.

P. 227. l. 19. 2 Pet. iii. 6, 7, 13.

P. 228. l. 14. Gen. i. 31.

Ibid. l. 20. Ibid. vi. 12, 13.

Ibid. l. 26. 2 Pet. iii. 13; Rev. xxi. 1, 4.

P. 229. l. 20. That our continents have once formed the bed of the sea is a point on which there is no longer any difference among geologists. On the cause of their submersion some differences of opinion exist. That it has proceeded from an universal Deluge, is the prevailing opinion of the geological schools of Germany and England; although the question remains undecided, as to the number of cataclysms by which its submersion has been effected. However divided on the latter point, on the former the present President of our native Geological Society, and the learned professors of

the science in our Universities, as I am assured, agree in opinion. The proof, on which the able President grounds his opinion, as delivered with his accustomed comprehensive succinctness, may be here stated. “The universal diffusion
 “ of alluvial sand, gravel, &c. proves that, at some time or
 “ other, *an Inundation has taken place in all countries* ;
 “ and the presence of similar alluvial deposits, both organic
 “ and inorganic, in neighbouring or distant islands, though
 “ consisting often of *substances foreign to the rocks of which*
 “ *the islands are respectively composed*, makes it highly
 “ probable, at least, that these deposits are products of *the*
 “ *same inundation*.

“The universal occurrence of mountains and valleys,
 “ and the symmetry which pervades their several branches
 “ and inosculation, are farther proofs, not only that *a De-*
 “ *luge has swept over every part of the globe*, but probably
 “ *the same Deluge*.

“The next argument which I shall advance in support
 “ of this conclusion, is founded on an almost invariable want
 “ of correspondence between the figure of the surface and
 “ the disposition of the strata or veins beneath it. Though
 “ where faults occur, the strata are tossed and turned in all
 “ directions, ‘it is extremely rare,’ says Mr. Farey, ‘to find
 “ a lifted edge or corner of strata, standing up above the
 “ general surface; the faults, however large the rise which
 “ they occasion, being rarely discernible by any sudden in-
 “ equality of the ground: numerous as cliffs, façades, mural
 “ ascents, or precipices are, very few of them are owing to
 “ faults; in general, the matter has been carried off.’

“Cor. 1. Hence the conformity between the direction of
 “ mountain chains, and that of the strata composing them,
 “ is not, as Humboldt supposes, necessary—but only acci-
 “ dental.

“Cor. 2. Mountains are not owing, as Deluc thought,
 “ to a subsidence of the strata which occupied their in-
 “ tervals.

“A general view of *the structure of our globe*, if taken

“ with accuracy, would tend perhaps still farther to convince us of *the universal operation of this Deluge.*” Greenough, Crit. Exam. p. 155. a. sq. This statement is confirmed and illustrated by evidence adduced from the geographical distribution of the earth, more particularly from the range of the mountains.

P. 229. l. 26. Greenough, Crit. Exam. p. 211. d.

P. 230. l. 1. Humboldt, Superpos. of Rocks, p. 30. c. 129. b.

Ibid. l. 10. Cuvier, Theor. of Earth, §. 23.

Ibid. l. 15. Greenough, ut supr. p. 149. d. sq.

Ibid. l. 25. Id. ibid. p. 193. d. sq.

P. 231. l. 2. Id. ibid. p. 152. d. sq. 181. c. sq.

Ibid. l. 11. See Boyle, Christ. Virt. prop. i. ii. Works, vol. v. p. 49. sq. Butler, Analog. par. ii. ch. vii. p. 262. b.

Ibid. l. 14. See Burnet, Theor. of Earth, b. i. ch. iii. vol. i. p. 37. d. To the evidence which is here collected, the testimony which has arisen from later researches may be added. Although the Egyptians denied that their native soil had been affected by the Deluge, they admitted the fact of its occurrence; in asserting that other countries had suffered in that catastrophe. In the exemption which they claimed for their own land, it is not improbable that they were influenced by the belief, that it consisted of an alluvial soil, formed long subsequent to the flood, by the retrocession of the sea and the deposit of their river. Plut. de Isid. et Osir. cap. xl. p. 503. 504. It is, however, obvious from the opinions which they held of the destruction of the earth by water as well as fire, that the tradition of the Deluge was virtually preserved; (vid. supr. note to p. 93. l. 19.) and it appears, they retained the remembrance of the day on which Noah entered the ark: Plut. ibid. cap. xiii. p. 461. a. b. xlii. p. 506. comp. n. on p. 28. l. 27. The knowledge of this date was easily preserved by a festival, in which an ark was annually borne in procession to the Nile; and thus, though in course of time, the precise year in which the Deluge occurred was forgotten, the day of the year on which it com-

menced, as observed without intermission, was correctly remembered: see Plut. *ibid.* p. 502.

Among the Asiatic nations who preserve the remembrance of the Deluge, *the Hindus* must be included. The destruction of the world by a Deluge, is the subject of the first Purana, which represents a few persons as having been saved miraculously in a vessel, by Vishnu, who was incarnate in the form of a fish. *Asiat. Research.* vol. i. p. 230. The entire course of time is divided into five periods, termed Calpas, which were respectively preceded by floods or Pralayas, in which the world has been successively destroyed and again renovated. At the end of the last of these periods, occurs the Maha-Pralaya, or great consummation, in which the whole creation and the gods themselves are involved. The affinity which has been traced between these mythological notions, and the opinions of the Chaldees and Egyptians, on the successive catastrophes, is justly supposed to afford no inconclusive evidence of their antiquity. See Prichard. *Egypt. Mythol.* p. 190. b. sq.

The testimony borne to the Deluge by *the Chinese* is also of the most solemn character, as preserved in their scriptures. The passage, in which it is recorded, has been extracted from the Shu-king, by M. Abel-Rémusat; who adds to the text a literal version, which he prefaces with the following observations; “en lisant dans le Chou-king *la description du déluge du Iáo*, les gouttes de la clef 85 accumulées et combinées avec les caractères des ouvrages publiés, des montagnes, des collines, semblent, si j’ose ainsi parler, transporter sur le papier *ces inondations et ces torrents qui couvraient les montagnes*, surpassoient tous les coteaux, et inondaient le ciel.” *Essai sur la Langue et la Littér. Chinoise*, p. 15. Having exhibited the text, pl. iii. he adds this literal translation; “Imperator ait: oh! quatuor montium (præfecti): inundantes inundationes, diffuentes aquæ passim vexant, diluvies diluvians operit montes, superat juga. Torrentes torrentesque mergunt cælum.” *Chou-king. ch. iáo-tien. liv. i. Iu-chou.* *Ibid.* p. 104. a.

The inquirers into the early antiquities of *the Americans* declare their concurrence in the general testimony. Among the most ancient of the nations of the New World whose origin has been investigated, the Toltecs and Aztecs are distinguished; it admits of no doubt, however, that they retained a traditionary knowledge of the Deluge; see Clavigero, *Hist. of Mexico*, vol. i. p. 87. As it, however, appears that the Mexicans preserved with this knowledge of the Deluge, traditions of the creation, fall and tower of Babel, it has been conjectured that they derived their information from the Nestorians, who penetrated to the north-eastern parts of Asia. Humboldt, *Research. conc. the Anc. Americ.* vol. i. p. 196. Their testimony, of course, as proving the late colonisation of the New World, brings indirect confirmation to the sacred record, in deducing the population of the earth from the small remnant of mankind which escaped the Deluge.

P. 231. l. 19. Vid. Beros. *Fragm.* apud Syncel. *Chron.* p. 24. a. 30. cf. *Cosm. Indicopl.* lib. xii. cap. i. iii.

Ibid. l. 24. Vid. Cuvier, *Disc. Prél.* p. 27. 134. *Théor.* §. 23. De Luc. *Lett. Géol.* p. 301. Dolomieu, *Journ. de Physique*, tom. xxxix. p. 390. Greenough, *Crit. Exam.* p. 149. d. p. 155. 257. Humboldt, *ut infr.* *Penn, Comp. Estim.* par. iii. ch. iv. vol. ii. p. 44.

P. 232. l. 2. Humboldt, *Superpos. of Rocks*, p. 382.

Ibid. l. 14. In this opinion the members of the schools of Freyberg and Paris coincide; and it is, I believe, generally adopted by our native school: the able President of the Geological Society, in himself a host, forms an illustrious exception.

Ibid. l. 21. This notion is espoused by Mr. Lyell, in his "*Principles of Geology*;" whose views are advocated by Sir. J. F. Herschel, *Introd. to Nat. Phil.* §. 139. p. 145. sq.

P. 233. l. 29. "A cause," observes Sir J. F. Herschel, "possessing the essential requisites of a *vera causa*, has, "however, been brought forward, in the varying influence "of the distribution of land and sea over the surface of the

“globe; a change of surface in *the lapse of ages*, by the “degradation of the *old continents*, and *the elevation of new*, being a demonstrated fact; and the influence of such “a change on the climates of particular regions, if not of “*the whole globe*, being a perfectly fair conclusion, from “what *we know* of continental, insular, and oceanic climates “by actual observation.” *Introd. ibid.* p. 146. From the *verity* of this cause, by which the complexity of the great problem of the theory of the earth is thus summarily solved, the *discriminative* fact on which the inferences of geologists are founded, is very prudently suppressed, or unwittingly omitted. The conclusions at which they arrive, respecting the previous *submersion* of continents, which their observation informs them, now possess an *elevation* above the level of the sea, are unluckily deduced not merely from the fossils, but “the *extraneous* fossils” which are embedded in the soil. This distinction is insisted on by M. Cuvier as fundamental; and is stated by Mr. Greenough, with force and perspicuity; where they respectively offer their solutions of the great geological problem: *comp. Herschel. ib.* §. 138. see note to p. 229. l. 20. A condition is thus included in the question, which the interchange in the elevation of sea and land is wholly inadequate to solve; and for the *vera causa* of which we must apply to Mr. Greenough; who, after pointing out the paradox and absurdity of the principle here revived, as previously put forth by the Huttonians, informs us, with a different force of conviction, that “to the solution of the problem *impetuosity of motion* “*in the water* is indispensable.” *Crit. Exam.* p. 193. d. *comp.* p. 191. sq. p. 140. d. sq.

The principle, on which the solution commended by Sir J. F. Herschel, proceeds, has this further merit, that it is not merely opposed to *matter of fact*, as attested by the common testimony of mankind, who assert the occurrence of a *Deluge*: the condition of “the lapse of ages,” which it assumes, is irreconcilably opposed to *the date* that is assigned that event, on evidence internal and external. “This then,”

observes Pallas, in reference to it, “ will be *that Deluge*, of
 “ which almost *all the ancient nations of Asia*, the Chal-
 “ deans, the Persians, the Indians, the Tibetans, and the
 “ Chinese, have preserved the memory, and fix the time
 “ *nearly to the period of the Mosaic Deluge.*” *Sur la Forme*
des Montagn. p. 47. “ The disintegration of rocks,” says
 Mr. Greenough, “ the mouldering of hills, and the gradual
 “ filling up of valleys, by the *débris* which falls into them,
 “ were adduced by Burnet, as conclusive arguments against
 “ the high antiquity ascribed to the earth by the writers of
 “ that day. Deluc, Dolomieu, and Cuvier have distinguish-
 “ ed themselves by the attention they have bestowed on
 “ other instances of diurnal change. After a patient inves-
 “ tigation of the phenomena of bays, promontories, deltas,
 “ dunes, taluses, seas, lakes, and rivers, *they are agreed* in
 “ thinking that the period of time, which has elapsed since
 “ the retreat of the diluvian waters, *cannot exceed from five*
 “ *to six thousand years.*” *Crit. Exam.* p. 170. comp. note on
 p. 231. l. 14. p. 234. l. 24.

P. 234. l. 11. See Greenough, *ut supr.* p. 150. a. sq.
 210. e. sq.

Ibid. l. 18. *Id. ibid.*

Ibid. l. 24. To the *vera causa* suggested in a preceding
 note, for solving the great geological problem, another is
 volunteered by Sir J. F. Herschel; of which it may be al-
 lowed, that it would be fully competent to what it pretends,
 could it be only reconciled with that with which it is com-
 pounded, or could both be proved consistent with the fa-
 vorite maxim, wherewith the philosopher taunts us short-
 sighted ecclesiastics,—“ that truth cannot be opposed to
 “ truth.” *Introd. ut supr.* p. 9.

For the purpose of securing this double triumph over
 error and superstition, the celebrated discovery of Lagrange,
 —of which it is curious to observe, on this occasion, that it
 is said to be the greatest of all truths in the doctrine of final
 causes,—is pressed into his service. That great analyst had
 shewn, that as the eccentricity of the earth's orbit is under-

going a slow diminution, its major axis being constant, its minor is on the increase. Hence, reasons Sir John Fred. as the mean annual amount of solar heat, by which the climates of the earth are determined, is inversely proportionable to the minor axis; it follows, that as the latter increases, the former is on the decline. Thus “the lapse of ages,” which is an essential condition in *the former vera causa*, being assumed; a sufficient reason may be rendered in *the latter*, for “the great change in the general climate of large tracts, “if not the whole earth.” Introd. ut supr. §. 140. p. 147.

A sufficient extension of time being premised, every geological difficulty occasioned by the discovery of the remains of the tropical genera, animal or vegetable, in the polar regions, disappears; and all the natural wonders of those regions are explained, without recurring to the wild fictions of fable.

Hæc loca non tauri spirantes naribus ignem
 Invertêre, satis immanis dentibus hydri;
 Nec galeis, densisque virûm seges horruit hastis:
 Sed gravidæ fruges, et Bacchi Massicus humor
 Implevêre: tenent oleæ armentaque læta.

From the genial warmth and felicity thus beneficently conferred on those inhospitable tracts, let us now turn a sober glance towards the southern regions, and their inhabitants in both realms of nature. Let it be then granted, that the polar temperature was sufficiently raised, for the support of “the animals and vegetables of former days enclosed in the strata;” and admitting that nature preserved that uniformity which Revelation indeed renders doubtful, but which this hypothesis assumes as unquestioned; the heat in the arctic regions must have then stood, as at present experienced in tropical climes, at 115° . As the difference between the polar and tropical climate, which must be equally supposed to have continued the same, amounts to 160° : on adding this degree of temperature to that which was, as we are now taught, in former times felt near the poles; we shall have the enviable heat of 275° , for that felt

at the same period near the line. Of the effect of this temperature on the inhabitants of the fresh and salt water, a rough guess may be formed, when it is known, that it exceeds, *merely* by 63° , that at which water, and by 53° , that at which saline mixtures are known *to boil*. Or to take a juster estimate from the experiments positively made upon heated air in a room; it is just 15° higher than that in which *eggs* were *baked hard*, in twenty minutes, if Sir Joseph Banks may be believed; and that in which a *beef-steak* was, in thirty-three minutes, *overdone*, according to the same grave authority. See Philos. Trans. for 1775, p. 111. Had *philosophers* had the good fortune to live amid this glorious profusion of baked and boiled, and added these luxuries to their breakfasts; it must be allowed, if *they* had but the luck to escape *a roasting*, (very different from that which Empedocles and Pliny endured,) they might have in other respects enjoyed themselves, at an inconsiderable expense.

So much for the consistency of this *vera causa* with *theory*; let us, before we part with it, bestow a little attention on its correspondence with *fact*. Among the productions of a tropical clime discovered in polar regions, the tusks and bones of elephants are included; and in one instance, the entire animal has been found with its flesh and hair inclosed in the ice. If these relics do not lead to a just inference, respecting a change of temperature in these regions; it must be obviously not deducible from any. From this fact, however, a geologist unfortunately arrives at a conclusion, which we leave Sir J. F. Herschel to reconcile with his hypothesis of a change of clime on the earth. "*The ice* must have "*formed*," he observes, "*at the same time* that it died: and "*thus we obtain a clue to the temperature which then prevailed* in that part of the world; and *a proof* that the "*same degree of cold prevailed there ever since*." Greenough, ut *supr.* p. 305.

In a word, if the *vera causa*, which is added to help out the exploded Huttonian hypothesis, now revived and put

forth as a novelty, lead to any conclusion; it must tend to refute the gratuitous assumption of that "lapse of ages," which is so necessary to its subsistence, that, on its being subverted, it hopelessly falls to the ground. The supposition being admitted, that a nearly *uniform temperature* has prevailed on the earth during the whole of its existence; though the question would be still involved in impenetrable obscurity, how the indigenous genera, which are now found in those regions, could have superseded the extraneous, that are there silently deposited in their tombs; it would be at least not irreconcilable with the fundamental position, on which the whole induction proceeds, that organised beings in the course of that time had existed upon the globe. But by the new condition which is ingeniously introduced into the subject, this position is fundamentally overthrown; the supposition, that the earth could have experienced *the high temperature* which is ascribed it, and could have *sustained those beings*, from whence its antiquity is collected, being contradictory that are not to be reconciled.

P. 234. l. 29. Humboldt, ut supr. p. 261. 262. 384. 385.

P. 235. l. 10. Basin formations have been discovered at Vienna, Turin, and Bordeaux, along the banks of the Apennines, and in the valley of the Loire. It has been conjectured, that with the native fossil remains, on which the deductions of geologists respecting them have been founded, the remains of the animals which the Romans collected, for their scenic exhibitions, and the fish which they naturalised in salt and fresh water lakes, have been incautiously confounded. The shells which pilgrims had been accustomed to collect and bring from distant regions, have been equally supposed to render the tests, on which the notion of successive formations has been founded, suspicious or insecure. In those places of more general resort, where there were ancient military stations, or modern religious establishments, such equivocal facts render it at least hazardous to conclude, that in every bed of extraneous fossils we discover the ruins of a

former world. The turgid inanity of the bloated theories of “tertiary beds and fossil bones,” which are often built on no surer foundations, reminds us of the conjectures with which the first geological essayists satisfied their doubts, as to the causes of some natural appearances.

Extensam tumefecit humum, ceu spiritus oris

Tendere vesicam solet, aut directa bicornis

Terga capri: tumor ille loci permansit et alti

Collis habet speciem, longoque induruit ævo.

P. 235. l. 24. I have adopted this solution of the phenomena of the formations termed *tertiary*, which seems to be favoured by B. Humboldt; although it is pronounced by Mr. Greenough to be “open to insurmountable objections:” see Humboldt, *ut suprà*. p. 46. d. sq. Greenough, p. 302. b. sq. “The supposed fresh and salt water beds,” observes the latter, “are identical in substance and conformable in position; there is no mineralogical difference between *the beds of gypsum* which contain *cerithiæ*, and those which contain *cyclostomata lymnææ* and *plan-orbes*; between the marine *limestone* and the fresh-water *limestone*, the marine *grit* and the fresh-water *grit*. Is it possible, that, the depositing menstruum having changed, the matter deposited should not have changed also! or that a sea having retired before a lake, or a lake having been overwhelmed by a sea, no trace of such a catastrophe should be visible anywhere on the then and still consolidated materials, which furnished the scene of action.” Crit. Exam. p. 303. a. I beg here, however, to submit;—how it can be ascertained, that the beds were not formed by the operation of the same agent, whether fresh, or salt; on what ground it is concluded, that those agents would produce beds not “identical in substance and conformable in position;” or on what ground concluded, that they have been at all produced, by either or both of these agents; and not by the organic matter, which has entered into combination with them upon its decomposition, or by some more subtle agency in nature; see Penn’s Comp. Estim. *ut suprà*.

par. iii. ch. vi. p. 106. d. sq. Until these questions are determined, I beg to submit, whether it is not too much to assume, that the materials of which those beds are composed were unconsolidated, at the time of the encroachment of the fresh or salt water; and that the access of either was attended with such violent agitation, as would dispose it to leave permanent marks of its approach or departure?

Both these celebrated geologists have expressed their doubts, on the validity of the distinction between fresh-water and salt-water shells; on which the notion rests, that the beds in which they are contained are formations of different characters and eras. See Greenough, *ibid.* p. 303. d. Humboldt, *ibid.* p. 46. d. The same scepticism had been previously expressed by Goldsmith: “I would consider “them” (he observes of those shells) “as bred in the numerous fresh-water lakes, that in primeval times covered “the face of uncultivated nature. Some of those shells we “know to belong to fresh waters; some can be assimilated “to none of the marine shells now known; why, therefore, “may we not as well ascribe the production to fresh waters, “where we do not find them, as we do that of the latter to “the sea only, where we never find them? We know that “lakes and lands also have produced animals that are now “no longer existing; why therefore might not these fossil “productions be among the number?” *Hist. of Earth*, ch. v. vol. i. p. 34.

The experiments which have been successfully tried, in naturalising salt-water fish to fresh-water situations, render the criteria on which the theory of different formations in the tertiary beds is founded, still more precarious. By the inroads of the sea upon a lake, the water would be brought to that state, to which those persons are accustomed to reduce it, in order to fit it for the reception of the natives of the sea. Here the different species, which belonged originally to the lake or ocean, might be inured to either element; or might by intermixture give rise to a hybrid offspring, as is observed to take place in the artificial process

of naturalising the tenants of the sea to fresh water. It was thus likely to happen, that differences might arise from mere contiguity of place, which are imputed to total revolutions in nature. The latter observation applies to marine and terrestrial plants, either in a state of intermixture with each other, or with the remains of animal substances in these formations. When greater difficulties arise, from the vegetable and animal productions of distant climes being collected together in a limited compass; as ordinary causes are incompetent to effect a solution of the phenomena, it must be sought in extraordinary. The perfect adequacy of one universal Deluge to explain these difficulties of the secondary and tertiary beds, has been shewn by Mr. Penn, with great force of argument and variety of illustration; see *Comp. Estim. of Min. and Mos. Geol. par. iii. ch. ix. p. 145. sq. comp. ch. vi. p. 86. sq.* But surely, of all the expedients by which it is presumed, that these difficulties may be removed; the most extravagantly arbitrary and absurd is that in which they are referred to successive acts of creative and destructive power; in which it is supposed the entire earth was involved, or the insignificant part of it which constitutes the tertiary formations!

P. 236. l. 16. Greenough, *ut supr.* p. 177. b. sq. Penn, *ut supr.* ch. iv. p. 45. sq.

Ibid. l. 24. Gen. vi. 17.

Ibid. l. 26. 2. Pet. iii. 6. comp. Gen. ix. 11. Burnet. Theor. b. i. ch. iii. p. 34.

P. 237. l. 25. Burnet, *Rev. of Theor.* p. 339. c. 342. d. 354. b. comp. Greenough, *ut supr.* p. 177. a. sq. 195. c.

P. 238. l. 2. See Burnet, Theor. b. i. ch. viii. p. 132. a.

Ibid. l. 11. Gen. vii. 11, 12, 19, 23.

Ibid. l. 24. See Penn, *ut supr.* vol. ii. p. 57. b. 78. c.

P. 239. l. 3. Buckland. *Reliq. Diluv.* p. 258.

P. 241. l. 14. Humboldt, *ut supr.* p. 454. d.

Ibid. l. 29. *Id. ibid.* p. 454. d. sq.

P. 242. l. 5. *Id. ibid.* p. 455. c.

P. 242. l. 19. Gen. vii. 11. Comp. Burnet, Rev. of Theor. p. 374. a.

P. 243. l. 3. Humboldt, ut supr. p. 461. sq. Although the distinction of formations is rejected by Mr. Greenough as purely theoretical; his concessions respecting the strata of the earth accord sufficiently for my purpose with the grand divisions of the geologists, on which my deductions are founded. He admits that "Generally speaking, the *primitive* rocks are of greater specific gravity than the secondary, and it appears from the experiments of Cavendish and Maskelyne, that the density of the superficial parts of the globe is less than that of its interior." Crit. Exam. p. 264. d. He likewise allows, that, "In general, the *crystalline rocks* may be said to be the oldest; the sandy, marly, clayey, the newest." Ibid. p. 263. d. And he admits the opinion, that the *transition rocks* were formed by mechanical and chemical action combined, to be well founded. Ib. p. 261. d. And he generally observes of formations; "If we consider the individual strata of which a formation is composed, so far from being able to trace these round the globe, it is generally impossible to do so to the extent of a few miles; for the regular order of succession, as it is called, is perpetually disturbed, either by the interposition of a new substance, or the discontinuance of an old one, or the substitution of one substance for another, or the splitting of one stratum into many." Ibid. 218. b. In these concessions, respecting the distribution of rocks into primitive transition and new, and the modes of their formation and disposition; a foundation sufficiently ample is laid, for supporting the deductions I have made, on the original state of the earth, and the alterations sustained by it, in the convulsion which caused the Deluge. With the notion of internal violence, which such a catastrophe implies, the discontinuance, disturbance, and disruption, which it appears from examination the strata exhibit, perfectly coincides.

P. 244. l. 18. Humboldt, ut supr. p. 129. b.

P. 244. l. 26. Id. *ibid.* p. 262. sq. Greenough, *ut suprà*. p. 206. d. It must be, however, acknowledged, that the latter able geologist maintains that the consolidation of the most recent rocks, and the imbedding of the fossil remains which they contain, were *antecedent* to the *Deluge*. Crit. Exam. p. 178. d. 179. d. He also regards the notion,—that these processes are to be ascribed to that catastrophe,—as a fruitful source of geological errors. These opinions, however, he merely supports on the fact, “that the newest “formations with which we are acquainted are intersected “by valleys, and covered by alluvial deposits.” *Ib.* p. 178. d.

But I venture to believe, that the true source of these opinions is to be sought in the limit, which this ingenious author has assigned, on no adequate or authentic grounds, to the cause and duration of the *Deluge*; on which, he however admits, he had formed no decided opinion. In the comprehensive view, which the sacred historian has given us into the subject, on which I shall soon take occasion to enlarge; (note to p. 246. l. 11.) the objections of this learned geologist are not merely cleared, but every apparent difficulty of the subject is obviated. Under the influence of the first great volcanic explosion, which was in intense operation for forty days, the surface of the earth, already fractured by aqueous pressure from beneath, was partially disintegrated; for the five months which succeeded, as the craters exhausted their fires, the agitation of the waters continued to abate. In this time it may be supposed the *fragmentary formations* were produced. To that which succeeded, the *sedimentary* may be ascribed; and may be thus dated from the time, when the waters taking a reflux course, again sought the bed of the ocean. Evidence of the force with which they proceeded, and the substances which they deposited in their course, appears in the texture of the formations, according to the admission of the same high authority. “The multifarious “productions of *secondary rocks*,” he declares, “afford “ample testimony of tides and *currents*. To what other

“ cause can we attribute the frequent intermixture of animals inhabiting the land, with those inhabiting the sea? “ of wood, fern, bones of *lacertæ*, *molluscæ* dwelling only in “ shallows, with *pentacrin*i dwelling only in the deeps?” Crit. Exam. p. 206. d. From that time, when the waters, in consequence of the diminution of their quantity, began rather to subside than to flow, the commencement of the *alluvial deposits* may be dated. That matter, which, from its loose and soluble nature, was held in combination with the fluid, was now gradually precipitated, and when mixed with *detritus*, and agglutinated with argillaceous cement, acquired from the rolling of the waves, the form and consistency of pebbles and gravel. It is consequently in strict conformity with this process, that “ the newest formations with “ which we are acquainted should be covered with alluvial “ deposits;” and in no respect inconsistent with it, that they should be occasionally “ intersected by valleys.” Had the mounds thrown up by the water, which “ swept the quadrupeds from the continents, and tore up the solid strata,” buried any part of those creatures under them; those terrestrial masses might have been excavated, by the currents, into valleys, as the water returned into the bed of the sea. While I consequently admit, that the intersection of formations by valleys, and the overlaying of them by alluvial deposits, give evidence of diluvian agency; I cannot concede the necessity of supposing an antecedent creation or cataclysm, to account for the origin of the “ newest” formations which may be excavated or superimposed. Comp. Crit. Exam. p. 203. d.

P. 245. l. 6. See Greenough, ut supr. p. 125. sq. 177. c. In deference to the opinion of this able geologist, I am compelled to admit, that the term *transported* would have better expressed, than *projected*, the mode, in which the boulder stones have passed from their native beds, to the sites which they now occupy: comp. ib. p. 128. a. 129. b.

Ibid. l. 28. See Humboldt, ut supr. p. 157. c. 411. c. 445. b.

P. 246. l. 8. Greenough, ut sup. p. 96. sq.

Ibid. l. 11. The solution which the celebrated geologist, from whose stores I have drawn so copiously, has given of the great geological problem, exhibits in its essential points, so striking a conformity to the statement of the sacred historian, that it will impart no less support than interest to my arguments to set them in immediate opposition. The analogy which arises from the comparison is the more valuable and conclusive, as it appears to be wholly unintended; the likeness which they exhibit arising merely from a critical view of the original text, which possesses a philosophic accuracy, that wholly disappears in the common translations.

“To the solution of the problem,” observes Mr. Greenough, “*Impetuosity of motion in the water* is indispensable; “but *an increased quantity* of water is, perhaps, superfluous; for there seems no good reason for supposing, that “the quantity which actually subsists upon the earth, if “thrown into a state of excessive agitation, would not be “of itself sufficient to produce all the phenomena of the “Deluge. We have seen that previously to that catastrophe, “the general state of things upon the earth was very much “the same as at present; that there existed land and sea, “both of them inhabited; . . . We have seen also, that “this order of things, so closely resembling the present “order, was suddenly interrupted by *a general Flood*, “which swept the quadrupeds from the continents, tore up “the solid strata, and reduced the surface to a state of “ruin: but *this disorder was of short duration*; the mutilated earth did not cease to be a planet; animals and “plants, similar to those which had perished, once more “adorned its surface, and nature again submitted to that “regular system of laws which has continued uninterruptedly to the present day.” Crit. Exam. p. 193. d.

In conformity to this statement, it may be admitted, without offering any force to the letter of Scripture, that, the violence of agitation, with which the water was swept

over the earth was “of short duration;” and that the account which the sacred historian has given of the height to which it attained in “covering the mountains,” is to be understood of its elevation during the limited period of its greatest agitation. The term גברו, Gen. vii. 18, 19, 20. employed by him, in describing the excess which it attained above the loftiest mountains is in fact expressive rather of its *force* than its *quantity*. It does not likewise appear, on a closer inspection of the sacred text, that, in strictness of speech, *the Deluge*, המבול, Gen. ib. 17. really lasted more than “forty days.” “*The waters*,” המים, we are, indeed, told, “prevailed upon the earth a hundred and fifty days;” but it is likewise said, “that they *returned* from off the “earth, הלך ושוב, flowing and retreating, and that they “*declined*, *from the end* of a hundred and fifty days; that “they were הלך והסור, *flowing and abating* until the “tenth month; and that, in the first month” of the following year, “they *were dried up* from off the earth.” Gen. vii. 24. viii. 3. 5. 7. If the rate of their decrease, from the hundred and fiftieth day to “the first day of the tenth “month,” when we are assured that “the tops of the mountains *were seen*,” ibid. 5. be compared with their rate for the remainder of the time, until the end of the year; it will be readily perceived, that the verb נראו, *were seen*, must be taken literally, and with immediate reference to the context, not figuratively, and as opposed to ויכסו, and *were covered*, long previously used. In the description of the historian, of consequence, nothing more is intended, than is really expressed; that “the ark rested in the seventh “month, on the seventeenth day of the month, upon the “*mountains of Ararat:*” and that in the tenth month, on the first day of the month, the tops of *these* mountains *were discovered*, (Gen. ib. 4, 5. comp. 6.) from the window. It was of course most remote from his intention to declare, that they were then first *uncovered*, and that the waters, having sunk in two months from such an elevation, left the earth, at the end of them, perfectly dry. It may be concluded,

therefore, from the scope and language of the inspired historian, that, on the disruption of the bed of the ocean, *the Deluge* swept over the tops of the *mountains* but for the space of forty days; and that *the waters*, after this time, continued for five months diffused over the *earth*, in a state of less violent agitation. From this time commenced their return into their original bed; into which they continued for two months rapidly to retire. At the beginning of the tenth month, they had not only sunk considerably, but their agitation had wholly abated. From that time, for the remaining two months, they continued gradually to subside, and at the end of them, had retreated altogether from the earth, into the bed of the sea.

On the contrast which is here exhibited, we may, as on a former occasion, remark, that it leads implicitly to the admission of that incompetency in science, which renders an application to preternatural causes necessary, from the inadequacy of natural. This able geologist, whose reasonings are founded on the soundest theoretical views, and verified by practical experience, admits in continuation, that “we are not aware of any force depending on the *internal* constitution of the earth, that could now effect so great a revolution as the Deluge:” with respect to any *external* force, after intimating, that a comet or meteoric body offered the least inobvious, he “forbears to give any opinion.” In the acknowledged inability to discover a natural cause, one step is advanced, and that not unimportant, towards the admission of a preternatural. The ancient and inspired geologist, on the other hand, refers the solution, in the first instance, to the Primary Cause; and, as the proximate, suggests the disruption of the great abyss, the pluvial torrents that attended which sufficiently intimate, that it was by volcanic explosion. The adequacy of the solution which he thus suggests is verified by the deductions of science, as far as it extends; while the truth of the cause, into which he resolves it, appears in the evidence still retained by the earth of such an explosion, and in the obvious effects produced

on its structure, by the water put in violent commotion. Comp. note to p. 247. l. 2.

P. 247. l. 2. Gen. vii. 11. From the proper force of the phrase *Tehum Rabba*, in the original, the early geologists endeavoured to justify the notion which they adopted, that the outer crust of the earth was altogether broken up, to effect the Deluge: see Burnet, Theor. b. i. ch. vii. p. 108. Whiston, New Theor. phen. 75. p. 266. 267. c. But they could only force their meaning upon the original, by explaining away its natural sense, after the analogy of an unintelligible passage in the Psalms: Ps. xxxviii. 7. The phrase, as they were not unconscious, is of the utmost importance; and if I am not wholly deceived, positively refers the cause of the Deluge to a disruption of the bed of the ocean. On applying to the phraseology of Moses, for the true meaning of the terms; as it is certain, he employs תהום, *the deep*, to express *the bottom of the sea*, Exod. xv. 5. 8: by תהום רבה, *the great deep*, he must mean *the bottom of the ocean*; Gen. vii. 11. viii. 2. cf. Is. li. 10. Ps. cxxxv. 6. Jonah ii. 5. The effect which he describes as produced upon it, at the commencement and close of the Deluge, brings further confirmation to this view of his meaning. He declares, that its *sources*, מעינות, on the former occasion, נבקעו, *were broken up*, וינסרו, *and were stopped*, on the latter; Gen. vii. 11. viii. 2. If this view of the sacred text be admitted; the question of the cause of the Deluge, as far as Scripturists are concerned, may be regarded as finally settled. Comp. Amos vii. 4. and note on l. 4. ut infr.

Ibid. l. 4. The causes which are here combined, I conceive for the first time, to account for the Deluge, have been, as I am assured, separately suggested by geologists of repute; although my present banishment from the neighbourhood of a library has prevented my satisfying myself of the fact by personal investigation. To the eruptions which gave rise to the Moluccas, Philippines, and other volcanic islands in the Indian Archipelago, as I learn from Mr.

Greenough, M. Pallas has attributed the *débauche*, by which the animals, whose bones and tusks are found in Siberia, were transported from the tropical regions. To the volcanic eruption that caused the protrusion of the mountain chains of the Andes and Cordilleras, from the bed of the Pacific, M. De Beaumont has, on the other hand, ascribed the general Deluge, which has left impressed on the earth such permanent evidence of its occurrence. The proximate cause of the geological phenomena, for which a solution has been sought, has been generally suggested by MM. Humboldt and Greenough; the former of whom inclines to the adoption of volcanic agency, and the latter espouses diluvian action; see Humboldt, *ut supr.* p. 70. sq. Greenough, *ut supr.* p. 96. sq. It is most probable, that all these theories are just as far as, in this view, they extend; and that they are only so far erroneous, as they lay claim to exclusive truth, where they have merely attained to partial. As my object is not to construct hypotheses for the confirmation of the philosophy of Scripture, but to trace the Analogy of Revelation and Science; the testimony of the latter to the proximate cause of the Deluge, may be taken from the celebrated writers, whose names are here collected. Of their combined evidence, we may pronounce, ὅθεν οὐκ ἀπέοικεν εἰπεῖν, ὡς ἰδίᾳ μὲν οὐκ ὀρθῶς ἕκαστος, ὁμοῦ δὲ πάντες ὀρθῶς λέγουσι.

P. 247. l. 20. Gen. vii. 19, 20.

Ibid. l. 24. Greenough, *ut supr.* p. 158. a. “The central
 “part of the old Continent exhibits a *girdle of rough or*
 “*Alpine land, extending from Portugal to China.* Pro-
 “digious mountains, many and deep lakes characterize this
 “tract, over a large portion of which *volcanos are distri-*
 “*buted.* In the opposite part of the new continent, we
 “find *the highest mountains of America, the Gulf of*
 “*Mexico, and the volcanos of the West Indies.* South of
 “this Alpine country, *a range of sandy desert extends over*
 “the old Continent with few interruptions, from the shores
 “of the Atlantic Ocean, to those of the Pacific. Opposite

“ to this, on the map of America, we find *the vast plain of*
 “ *the Amazons and the Lanos of Mississippi*. The mountain
 “ range marked on the maps of Africa, under the title of
 “ Gebel el Kumir, or Mountains of the Moon, is, I believe,
 “ little better than imaginary; if such a range exists, it may
 “ perhaps be found to correspond to that which in South
 “ America appears to extend from the sources of the rivers
 “ Paraguay and Parana to Minas de la Baheia and Per-
 “ nambuco.”

P. 248. l. 4. Id. *ibid.* p. 157. d. “ The southern coasts of
 “ the German ocean and Baltic, together with *the north of*
 “ *Asia*, consist of *marshes, sands, and alluvial plains*, the
 “ rivers of which flow indiscriminately in almost every di-
 “ rection. In this enormous tract of low or smooth land,
 “ rise the Scandinavian, Uralian, English, Welsh, Scotch,
 “ and Irish mountains, forming insulated groups: such,
 “ under the same latitude, seems to be *the structure of*
 “ *North America*.”

Ibid. l. 11. See Humboldt, *ut sup.* p. 73. c. sq. Green-
 ough, *ut sup.* 159. d.

Ibid. l. 20. Gen. vii. 23.

P. 249. l. 14. Though fossil human bones have been
 found at Durfort, Bize, and Salliles, in France, and Kosritz
 in Saxony, I annex no importance to the discovery; as there
 is little probability in the supposition, that they are the re-
 mains of the inhabitants of the antediluvian world. I cannot,
 on the contrary, refuse my assent to M. Cuvier's opinion,
 that the countries, in which geological investigation has been
 prosecuted, were not inhabited by man, at the epoch when
 the fossil remains were imbedded in the strata. His con-
 clusion seems to be equally well founded, that by the result
 thus established, natural and civil history are connected; as
 the revolution by which those fossils were buried, and since
 which man has been established in the continents of Europe
 and America, is thus proved to be recent. Disc. Prélim.
 p. 68. See note on p. 327. l. 17.

P. 252. l. 8. 12. Gen. vi. 17. viii. 1.

P. 252. l. 17. If the sublime imagery in Ps. lxxvii. 16—19. xviii. 13—15. Job xxxviii. 7. Luke xv. 10. be consulted, the subjoined description will not be thought destitute of scriptural authority.

P. 254. l. 27. 1 Thess. v. 19. Heb. x. 29.

P. 255. l. 6. 2 Pet. iii. 7.

P. 257. l. 6. Greenough, ut supr. p. 174. a. sq.

P. 258. l. 10. 2 Pet. iii. 10.

Ibid. l. 17. Isa. xxxiv. 4.

Ibid. l. 24. Matt. xxiv. 29.

Ibid. l. 29. Ibid. 35.

P. 259. l. 4. 2 Pet. iii. 13.

P. 262. l. 29. Gen. vi. 5.

P. 263. l. 2. 2 Pet. iii. 7.

Ibid. l. 12. Ibid. 11, 12, 14.

LECTURE VII.

P. 268. l. 9. Gen. ix. 12, 13, 14.

Ibid. l. 13. Burnet, Theor. ut supr. b. ii. ch. v. p. 322.

P. 269. l. 18. See note to p. 246. l. 11.

P. 270. l. 7. Gen. ix. 11.

Ibid. l. 30. Prichard, Phys. Hist. of Man, vol. i. p. 82.

P. 271. l. 16. Gen. vii. 19. 23.

Ibid. l. 25. Temminck, Monograph. de Mammalog. tom. i. p. xi. It is, however, not more contrary to all probability, to suppose, that the species of animals, at the time of the Deluge, bore any proportion to that which now exists on the earth; than to suppose that the canine species possessed every variety which they have not only attained, but daily attain, under our eyes. On this subject my opinions are more fully disclosed in the course of the Lecture. Comp. note on p. 308. l. 18. 28.

Ibid. l. 30. Gen. vi. 19, 20. vii. 15, 16.

P. 272. l. 6. Mr. Lawrence, after indulging, at the usual

length, in the shallowness and flippancy of remark, which characterize his happiest manner, comes to the following conclusions, which if they prove nothing more, prove atleast that his theological and scientific pretensions are pretty nearly on a level. "I have only to add, that the representations of all the animals being brought before Adam, in the first instance, and subsequently of their *being all collected in the ark*, if we are to understand them as applied to the living inhabitants of the whole world, are *zoologically impossible*." Lect. ut supr. p. 214.

P. 272. l. 11. See Anc. Univ. Hist. b. i. ch. i. vol. i. p. 297.

Ibid. l. 25. The great difficulty which has been found in accounting for the preservation of a multitude of animals, in a vessel of the capacity of the ark, for the space of a year, has been principally felt in the case of the carnivorous animals, for whose sustenance it has been thought there was no apparent provision. Vid. Bochart. Hieroz. lib. i. cap. ii. col. 953. "The whole of these cruel and ferocious tribes," observes Goldsmith, "seek their food alone; and except at certain seasons, are even enemies to each other. The dog, the wolf, and the bear, are sometimes known to live upon vegetables or farinaceous food; but all of the cat kind, such as *the lion, the tiger, the leopard, and the ounce, devour nothing but flesh*, and starve upon any other provision." Hist. of Anim. b. iv. ch. i. The following account of the prevailing customs of the East will illustrate the manner, in which the animals of this kind, that contributed to perpetuate the species, might have been provided in the ark with lodgment and sustenance, during the continuance of the Deluge. "Amongst the higher classes *tigers and leopards* are retained for field sports, under the charge of regular keepers. In many instances these wild inhabitants of the jungle are tamed, to be as obedient as dogs, or other domestic animals. I have often seen *the young cubs sucking the teats of a goat*, with which they play as familiarly as a kitten with its mother. A very intimate ac-

“quaintance of ours has several tigers and leopards, which
 “are perfectly obedient to his command; they are led out
 “by their keepers night and morning, but he always feeds
 “them with his own hands, that he may thereby make them
 “obedient to himself, when he sports in the jungles, which
 “he often does with success, bringing home stags and ante-
 “lopes to grace the board, and distribute amongst his Eng-
 “lish friends. The tigers and cheetahs are very generally
 “introduced after breakfast, when native noblemen have
 “European visitors.” Mrs. Meer Hassan Ali, *Observ. on*
the Mussulm. of India, vol. ii. p. 30. While hunting formed
 an occupation of man in tropical climates; it would seem,
 from the observations of naturalists, that he must have de-
 pended upon animals of this kind, for the enjoyment of the
 chase: “It must not be supposed,” adds Goldsmith, “that
 “it is from choice the Asiatics use this method of chase;
 “for, no doubt, were dogs serviceable among them as they
 “are in Europe, they would be employed for the same pur-
 “poses. But the fact is, that the extreme heat of the tro-
 “pical climates produces such universal putrefaction, and
 “sends up such various and powerful scents, that dogs are
 “at first bewildered in the chase, and at last come to lose
 “the delicacy of their scent entirely. They are, therefore,
 “but little used in those warm countries; and what could
 “they avail in places where almost every other animal of
 “the forest is stronger and more rapacious? The lion, the
 “tiger, the panther, and the ounce, are natural enemies to
 “the dog, and attack him wherever he appears with un-
 “governable fury. The breed, therefore, in those places
 “would quickly be destroyed; so that they are obliged to
 “have recourse to those animals which are more fitted to
 “serve them, and thus convert the ounce [chîtah] to those
 “purposes for which dogs are employed in Europe.” *Hist.*
of Anim. *ibid.* p. 226. d.

P. 273. l. 2. Gen. vii. 2. 3.

Ibid. l. 12. Bochart. *Geogr. Sacr. lib. i. cap. iii. vol. i.*
col. 15. l. 33. col. 16. l. 52.

P. 274. l. 3. Adelung, in undertaking to determine the probable site of the earliest settlement of mankind, by the evidence of history, and guidance of geography, bears a strong, though an indirect and involuntary testimony, to the accuracy with which it is determined by the sacred historian; see *Mithridat. Einleit.* p. 3. sq. After pronouncing, that the little information which Moses imparts is calculated to excite rather than allay curiosity; he makes use of the light which the inspired historian supplies, in directing his attention to a region of Asia, the elevation of which fitted it for the earliest abode of the inhabitants of the earth, as facilitating its deliverance from the waters of the Deluge. As he rejects the region of Armenia, which Moses has pointed out, for the high table-land of Gobi or Shamo; we might naturally conclude, that the spot, on which he thus fixes, would be better suited to his purpose, than that which he had so unceremoniously discarded. On the contrary, it is only introduced to our notice, to afford him the opportunity of rejecting it also, as a bleak and barren region; and, as such, wholly unsuitable to the only purpose, on account of which it could be at all mentioned. Having, however, by this remove, withdrawn our attention from the west to the centre of Asia; he suddenly deploys to the south, and discovers in Thibet what he might have at once found, without the trouble of a search, in Armenia. As the object of this substitution is to account for the distribution of the race of animals, including the human species, over the three great continents of the Old World; a glance at the map will be sufficient to prove, that instead of affording facilities for the removal of any difficulties in the subject, it increases and aggravates immeasurably those with which it is already encumbered. The investigations of this learned inquirer, if attended with no other effect, have thus at least tended to prove, that when the direct course is deserted, which Scripture prescribes, science, in its present advanced state, furnishes no clue by which a more certain can be discovered.

The Armenians, to whose country we are thus ultimately referred, suppose the site of paradise to have been near the present situation of Erivan, which lies at the distance of ten or twelve leagues to the north-east of Mount Ararat. Chardin, tom. i. p. 157. Of the fertility of this country, the most favourable picture is drawn by the Romish missionaries: “En sortant d’Erivan, on entre *dans une char-* “*mante plaine, fertile en toutes sortes de fruits et de grains,* “abondante en riz et en coton, avec *de beaux vignobles de* “*gras pâturages*: grand nombre de villages et de jolies “maisons de plaisance agréablement situées donnent à cette “ville *une vue délicieuse.*” Choix des Lettr. Edifiant. tom. vi. p. 8. Having stated, that ice and snow prevail there in winter, and intense heat in summer; they represent the wealthier inhabitants as seeking, in the latter season, a cool and healthy retreat in the mountains. We must therefore descend, for the first settlement of mankind, in the direction of Shinar, to the south-east of Ararat; where the climate is more genial and the soil possessed of greater fertility, and so proceed in the course prescribed by Scripture.

P. 275. l. 10. When the object of Natural History is known, the futility of the supposition, that the nomenclature and classification, of which it properly consists, should be recognised in Scripture, will be selfevident. “L’histoire “naturelle,” observes M. Cuvier, “doit donc avoir pour “base ce que l’on nomme un système de la nature, ou un “*grand catalogue*, dans lequel tous les êtres portent des “noms convenues, puissent être reconnus par des caractères “distinctifs, et soient distribués en divisions et subdivisions, “elles-mêmes nommées et caractérisées, où l’on puisse les “chercher.” Règne Animal. Introd. tom. i. p. 7. c.

P. 276. l. 5. On the subject of the digestive organs, the observations of Dr. Fodéré merit particular attention for their accuracy and comprehensiveness: Voy. Physiol. Posit. §. 669. sq. tom. iii. p. 62. sq. Of the animals and birds, with which we are immediately concerned, he makes the following observations, which will sufficiently explain the

natural causes, on account of which they were considered eatable, or clean: “Ceux qui n’ont des dents incisives qu’à la mâchoire inférieure, tels que le chameau, la girafe, le béliet, le bouc, le bœuf, le cerf, et les cétacés, ont *quatre estomacs*, au moyen desquelles les alimens acquièrent, *par la rumination*, le reste de la trituration que leur avoit manqué dans la première mastication; et ils ont aussi des intestines beaucoup plus étendus que ceux des monogastriques. Parmi les oiseaux, qu’on peut distinguer généralement en carnivores et en granivores, l’estomac des premiers est membraneux, et il contient un suc très-actif, capable de ramollir les os, séparé par un appareil glanduleux qu’on trouve déjà dans l’œsophage et qu’on ne voit pas dans l’homme; leur bile est aussi très âcre: ces agens chimiques suppléent donc entièrement ici aux moyens mécaniques. Les granivores ont, au contraire, un estomac formé d’un muscle nommé *quadrigastrique*, revêtu d’une membrane dur et épaisse, très-propre à la trituration, mais avec un suc gastrique moins âcre que dans les premiers; ils ont aussi un cœcum double.” Ibid. §. 670. p. 68.

P. 276. l. 20. For the foundation of the analogies which are here deduced from science in illustration of Scripture, my acknowledgments are due to my early and ingenious friend, N. A. Vigors, Esq. In a Lecture delivered at the scientific meeting at Oxford for 1832, he pointed out these analogies, between the ruminant animals and the gallinaceous birds; from whence the inferences are deduced by me, in confirmation of the distinctions of the Mosaical dispensation.

P. 277. l. 20. 24. Lev. xi. 3. 27.

P. 278. l. 9. Ibid. xi. 9. 21.

P. 279. l. 13. Ibid. 13. 19.

Ibid. l. 16. To this sense the Hebrew term עוף, signifying *volatile*, is fixed by its derivation, from עָוָה, *volavit*; a bird being generally expressed by צִפּוֹר, and a bird of prey by עֵיט: vid. Bochart. Hieroz. lib. i. cap. ix. col. 59. l. 23. In rendering the former term, the opposition is striking be-

tween the ancient and modern versions; the former adopting the more general term, which frees the passage from every scientific difficulty: while the latter use the particular term, which is exclusively affected by the objection. Thus the phrase *מן עוף* of the Hebrew, which Pagnini renders literally, “*ex volatili*,” is properly expressed in the Greek by *ἀπὸ τῶν πετεινῶν*; in the Chaldee, by *מן עופא*; in the Samaritan, by *מן עופא*; in the Syriac, by *מן עופא*; in the Arabic, by *من الطير*: with the same signification. But of the modern versions, which follow the rendering of the Latin Vulgate, “*de avibus*,” the English has “among the fowls;” the French, “*d’entre les oiseaux*,” the Italian, “*fra gli uccelli*,” the Spanish, “*de las aves*,” and the German, “*unter den Vögeln*.” In such mistranslations, the trite objection to Moses’s classification is, of course, exclusively founded.

P. 279. l. 25. Such is the just view in which this subject is regarded by Bochart, who justifies his opinion by the authority of Aristotle; “*Ut ab aquila inceptit Moses, quæ regina est avium, ita in vespertilionem desiit, qui naturæ est ambigua, et inter aves et quadrupedes medium locum obtinet. Huc pertinet quod Philosophus eum scribit ἐπαμφοτερίζειν τοῖς πτηνοῖς καὶ πεζοῖς, ἀμφοτέρων τε μετέχειν, καὶ οὐδετέρων, De Partib. Animal. lib. iv. cap. xiii.*” Hieroz. par. ii. lib. ii. cap. xxxii. ad init.

P. 280. l. 6. Prichard. Phys. Hist. of Man, b. i. ch. iii. §. 8. vol. i. p. 78. Penn, Comp. Estim. par. iii. ch. xiii. vol. ii. p. 209.

Ibid. l. 15. Gen. viii. 17.

P. 282. l. 4. If the constant creation of souls by God, be alleged, in justification of this arbitrary notion of partial creations in particular regions, since the primeval sabbath; the essential difference of the two cases may be easily shewn, and confirmed by the authority of Bacon. “At the first,” as he observes, “*the soul of man* was not produced by “heaven or earth, but was breathed immediately from

“ God: so that the way and proceedings of God with
 “ spirits *are not included in nature*: that is, in the laws of
 “ heaven and earth; but are reserved to the law of his
 “ secret will and grace; wherein God worketh still, and
 “ resteth not from the work of redemption, as *he resteth*
 “ *from the work of creation*; but continueth working till
 “ the end of the world: what time that work also shall be
 “ accomplished, and an eternal sabbath shall ensue. Like-
 “ wise, that whensoever God doth transcend the law of na-
 “ ture by miracles, (which may ever seem as new creations,)
 “ he never cometh to that point or pass, but in regard of
 “ the work of redemption, which is the greater, and whereto
 “ all God’s signs and miracles do refer.” Confess. of Faith.
 Works, vol. iv. p. 414.

P. 283. l. 2. 11. Gen. viii. 17. ix. 9, 10, 11.

P. 284. l. 25. Even Mr. Lawrence, whose religious, no less than his philosophical bias, induces him to claim for
 “ all the species which we know at present, as sufficiently
 “ distinct and constant, a distinct origin and common date,” follows Blumenbach, in admitting the validity of this logical objection to the principle, by which they would be limited. Lectures, ut supr. p. 228. c. comp. p. 231. a.

P. 285. l. 5. Prichard, ut supr. b. ii. ch. i. §. 3. p. 97. a.

Ibid. l. 11. The substance of this rule, which has been suggested by Prof. Blumenbach, has been extracted by one of his disciples, and may be offered, in his words, to those who can understand it; “ Since neither the *principle of breeding*, nor the constancy of particular characters, are
 “ sufficient in all cases to enable us to judge of species—
 “ and since these fail, particularly in the domestic kinds,
 “ where their aid is principally required—we must resort at
 “ last to the criterion recommended by Blumenbach, and
 “ draw our notions of species in zoology from analogy and
 “ probability. If we see two races of animals resembling
 “ each other in general, and differing only in certain re-
 “ spects, according with what we have observed in other in-
 “ stances, we refer them without hesitation to the same

“ species, although the difference should be so considerable,
 “ as to affect the whole external appearance. On the con-
 “ trary, if the difference should be of a kind which has
 “ never arisen, within our experience of the animal king-
 “ doms, as a variety, we must pronounce them to belong to
 “ distinct species, even although there should be, on the
 “ whole, a great general resemblance between the two.”
 Lawrence, *ut sup.* p. 231. b. *conf.* Blumenb. *de Gener.*
Human. Var. Nat. p. 70. sq.

P. 286. l. 27. Prichard, *ut sup.* p. 95. sq. Lawrence, *ut sup.* p. 228. sq.

P. 288. l. 10. Vid. Pallas, *Mémoire. sur la Variat. des Anim. Act. Acad. Petrop.* 1780. Prichard, *Phys. Hist.* b. ix. ch. i. §. 5, 6. vol. ii. p. 549. b. p. 558. sq. *Philos. Journ.* Apr. 1829. p. 155. sq.

P. 289. l. 17. Prichard, *ut sup.* vol. i. p. 96. Lawrence, *ut sup.* p. 229. Instances of such alliances, even where nature seemed to have placed an insurmountable barrier to an union, are on record. See Pallas, *Spic. Zool. fasc. xi.* p. 36. Wood's Buffon, vol. iv. p. 221.

P. 290. l. 5. Lev. xix. 19.

Ibid. l. 13. Pallas, *Mémoire. ut sup.* see note to p. 308. l. 18.

P. 291. l. 4. Cuvier, *Règne Anim. tom. i.* p. 80. Blumenbach, *Elem. of Nat. Hist.* p. 35. Stark, *Elem. of Nat. Hist.* vol. i. p. 39. Prichard, *Phys. Hist.* vol. ii. p. 589. d. Lawrence, *ut sup.* 233. a.

Ibid. l. 20. *Comp. note on p. 272.* l. 25.

P. 292. l. 12. See Ranking on *Orient. Sports.*

Ibid. l. 29. *Id. ibid. et Hist. Research. on Conq. of Peru and Mexico.* Bochart, *Hieroz. par. i. lib. ii. cap. xxv.* col. 254. sq.

P. 293. l. 21. It is indeed supposed by Cuvier, that this elephant belonged to an extinct species, the remains of which are found in both the northern continents; voy. *Mém. sur les Eléphants, Annal. du Musée.* The great extent of the Mongul conquests, and the immemorial use of this animal, in

war and hunting, render the supposition much more probable, that it belonged to the species known as the Asiatic: but that by naturalization to a different climate, it had undergone a change, similar to that which is notoriously experienced by European animals, on their transportation to America. “It ought to be considered as a rule in natural history, that neither the horns, the colour, the fineness or the length of the hair, nor the position of the ears, are to be considered as making an actual distinction in the kinds. These are accidental varieties, produced by climate and food, which are known to change even in the same animal, and give it a seeming difference of form.” Goldsm. Hist. of Anim. b. i. ch. iii. p. 83. Comp. Prichard, ut supr. vol. ii. p. 570. d. sq. Naturalists have been even of opinion, that other species, when transported to a different clime, have undergone a change, not less great than that which is supposed to characterise the Oriental and the northern elephants. “The urus and the bison,” observes the same pleasing writer, for the correctness of whose nomenclature I do not vouch, “have been considered, from the variety in their make, to be distinct in their production; but they are all in fact the descendants of one common stock, as they have the certain mark of unity, they breed and propagate among each other. Naturalists have therefore labored under an obvious error, when because of the extreme bulk of the urus, or because of the lump upon the back of the bison, they assigned them different places in the creation, and separated a class of animals which was really united The differences, therefore, between the cow, the urus, and the bison, are merely accidental. The same caprice in nature, that has given horns to some cows, and denied them to others, may also have given the bison a hump, or increased the bulk of the urus, it may have given the one a mane, or denied a sufficiency of hair to the other.” Id. *ibid.* p. 52. To the horns he might have added a hump, by which the Syrian cows were distinguished, according to Aristotle, Hist. Anim. lib.

viii. cap. xix. and the Carian according to Pliny, Nat. Hist. lib. viii. cap. xlv. The effect of climate, in producing such varieties was not unknown to the ancients, as early as the times of Herodotus; who imputes the want of horns in the Scythian cattle, to the coldness of the climate: Melpom. cap. xxix. An argument has also been deduced from the names assigned by the Slavonians to the elephant and some other Oriental animals, that this people are not of European, but Asiatic origin. vid. Forster. Epist. ad Michael. Spic. Geogr. Hebr. p. 101. If it have any weight, it would imply that the animal, as well as the people, had passed into the north from a southern region.

P. 294. l. 23. Proceed. of Commit. of Zool. Soc. 1830. p. 126.

P. 296. l. 13. See Prichard, ut supr. vol. i. p. 75. sq.

Ibid. l. 17. Id. ibid. p. 70. c. 73. b. comp. p. 59. a.

Ibid. l. 29. The affinity between the birds of different continents,—whereby their dispersion from a particular point, and their gradual adaptation to particular climates are alike confirmed,—has been pointed out and exemplified with singular felicity, in one set of emigrants. “Mr. Vigors,” Proceed. of Zool. Soc. ut supr. “shewed that the form “which characterises *the true quails* extends to Australia, “where several species are found. And referring to the “deviation in form, which partially separates the South “American bird from the allied group of the same continent, “and brings it in contact with those of Australia, and through “them with those of the old continent, he dwelt upon the “beautiful series of geographical affinity, which in this instance united the southern extreme of the New World “with that of the nearest portions of the southern hemisphere, in like manner as the zoology of the northern extreme is united with that of *the neighbouring continents of Europe and Asia*. He pointed out some additional “instances, in which the same union might be traced.”

P. 298. l. 14. See note to p. 272. l. 6.

P. 299. l. 18. The scale of nature, according to which the entire fabric of natural science is now adjusted, has been

sometimes termed the Arabian Scale, as having been promulgated by Averoes, by whom it was borrowed from Plato. It has been described by Proclus as a favorite doctrine with the later Platonists, who derived all existences, in a descending scale from the Deity. Procl. in Theol. Plat. lib. vi. cap. ii. It was deduced from this source, and revived by Vanini, who was brought to the stake for his opinions, and suffered as a heretic. Having been adopted by writers of the last age, in Natural and Revealed Theology, it has latterly passed into the service of the Comparative Anatomists, who follow its graduation in the arrangement of Natural Science. See Wollast. ut supr. p. 107. Burnet de Stat. Mort. p. 25. a. 277. d. Fodéré, ut supr. tom. iii. p. 138. sq.

P. 299. l. 25. The subject of *orgonic rudiments*, as they should be properly termed, has been selected by Prof. Lawrence, among the topics, calculated to shake the belief of his pupils in the first principles, not merely of Revealed, but of Natural, Religion. Lectures, ut supr. p. 43. From which of the French or German sceptics "the secretions" have fallen, which the English anatomist has here obligingly picked up, the readers of MM. Bichat, Cabanis, Treviranus, &c. may readily determine: for in their track Mr. Lawrence usually condescends to walk, with the obsequiousness of the little animal, that, naturalists assure us, waits on similar occasions upon the rhinoceros.

P. 300. l. 16. "It seems as if a certain model or original type, adapted to the intended function, had been fixed on as a pattern for the construction of nearly allied and analogous beings; and that this model had been adhered to, even in those cases where some particular function did not exist, and where, consequently, the corresponding organ was in reality unnecessary." Lawrence, *ibid.* After specifying some examples, he concludes, they "are neither subservient to use nor ornament; and seem, to our imperfect knowledge, to exemplify the prevalence, in animal organisation, of a *mechanical principle*, of the adherence to a certain original type or model." *Id. ibid.* Whatever

may be thought of the soundness of this principle, its consistency with that philosophy, will not be denied, which, with a due disregard of the First Cause and Intelligent Artificer of all things, inculcated on the anatomical student, that causation consisted in “the mere relation of uniform antecedence,” and that there can be “no thought without a brain :” Lectures, *ibid.* p. 53. b. 68. d. To such brutish nonsense is the atheist obliged to descend for a principle to support his system, which of all that can be conceived is the most stupidly irrational. To the views of the pure theist, instead of this “*mechanical principle*,” the notion of an *ideal* type directly suggests itself; which as identified in the uniformity of nature’s works, proves the unity and intelligence of their Author. “We ourselves,” observes Wollaston, “cannot but be witnesses, that there are *stated methods*, as so many *set forms* of proceeding, which things punctually and religiously keep to. The same *causes*, circumstanced in the same manner, have always the same success: all *the species of animals*, among us, are made according to *one general idea*; and so are those of *plants* also, and even *minerals*: no new ones are brought forth or arisen any where: the old are preserved and continued by the old ways.” Relig. of Nat. sect. v. p. 82. a.

P. 301. l. 29. Fodéré, *ut suprà*. Introd. p. xiii. n. “On est forcé de convenir que plus nous étendons nos connoissances en Anatomie Comparée, plus nous voyons diminuer les espérances qui avoient été placées sur cette science pour faire avancer la physiologie humaine. De là, le peu de fond qu’on doit mettre sur tant d’expériences faites sur les animaux à sang chaud et à sang froid, et la nécessité indispensable d’étudier l’homme sur l’homme même. C’est de quoi l’on est convaincu en méditant sur les travaux du profond et infatigable M. Cuvier. On y voit, en effet, que *chaque classe, chaque espèce d’animal, exécute avec des organes différens de ceux de l’homme, les diverses fonctions nécessaires à la vie et à la conservation des races, telles que la déglutition, la digestion, la circulation, la*

“ *nutrition, la génération, etc.*; et qu’ainsi il paroîtroit
 “ que la vitalité obéiroit, dans *chaque espèce*, à des *loix dif-*
 “ *férentes*, si d’une autre part, il n’y avoit pas, en général,
 “ des nerfs pour la sensibilité, des poumons, des trachées, ou
 “ des branchies, pour mettre les humeurs en contact avec
 “ plus ou moins d’oxigène, et donner plus ou moins de vi-
 “ vacité aux mouvemens. Voyez les Leçons d’Anatomie
 “ Comparée de M. Cuvier, recueillies et publiées par M.
 “ Duvernoy. Ou bien, les extraits qu’en ont donné MM.
 “ Moreau et Double, dans le Journal Génér. de Médecine,
 “ tome viii. p. 380. et tome xxv. p. 90. 343. et 452.”

P. 302. l. 30. Rev. xi. 4.

P. 303. l. 7. Gen. i. 27, 28.

Ibid. l. 17. Ibid. ix. 1, 2.

Ibid. l. 20. Isa. lxiii. 16. lxiv. 8; Matt. vi. 9; John xx.
 17; Rom. i. 7.

Ibid. l. 24. Gen. i. 27, 28.

Ibid. l. 28. Ibid. i. 28. viii. 17.

P. 305. l. 18. Ibid. viii. 16, 17.

P. 306. l. 1. See Prichard, ut supr. vol. ii. p. 568. d. sq.
 Although no convert to this learned physiologist’s notion,
 that there were centres of creation, round which the species
 belonging to the same genus were grouped; I must confess,
 that, with this exception, I find it difficult to evade the force
 of his reasoning. Amongst the many truths, in the economy
 of nature, which he has contributed to elicit and establish,
 with no less ingenuity than learning, the law of adaptation
 followed by the species and varieties of animals, on which
 their geographical distribution depends, has been frequently
 asserted and established: see vol. i. p. 59. c. sq. vol. ii. p.
 566. c. 570. a. sq.

Ibid. l. 9. Voy. Fodéré, ut supr. §. 818. tom. iii. p. 228.
 Cuvier, Règne Animal. Introd. tom. i. p. 18. a.

P. 308. l. 9. See Macleay’s Lett. on the Dichot. Syst.
 p. 19. The classification of natural objects, in circles rather
 than series, acquires a growing popularity among the sci-
 entific. It has been followed by MM. Macleay, Vigors, and

Swainson, having been previously adopted by MM. Fries and Agardh, and has been extended by M. Ampère to the mineral kingdom: see Macleay, *ibid.* p. 24. 26. From its striking conformity to the method observed by nature, in the three realms; which has been so happily illustrated by Mr. Macleay in Entomology, and by Mr. Vigors in Ornithology, there cannot be much ground of doubt, that it will ultimately supersede the Arabian Scale, on which Baron Cuvier has contributed, by his powerful support, to confer equal strength and celebrity.

P. 308. l. 18. The distinction and permanence of species, from the time of their creation, has been maintained by Buffon, Linnæus, Cuvier, and the great body of naturalists; but has been rejected by Lamarck, St. Hilaire, and others, who passing into the opposite extreme, have maintained, that the agency of the animals themselves has been exclusively employed, in constructing the animal kingdoms. As is generally the case in theories, which thus stand directly opposed, there is partial truth on both sides of the question: the aggregate number of species having been probably limited at first, until by gradual development, in the process of nature, they assumed the various and settled forms, which they at present possess, and from which there is scarcely any known deviation. M. Pallas has judiciously adopted this latter view; which as lying equally between extremes, bears impressed on it one of the strongest characters by which truth is distinguished. In conformity to the notion, which I have labored to support, he deduces the rise of many existing species, from the varieties originated by the spontaneous efforts of nature; which time and circumstances have contributed to render permanent and decided.

The objections which are raised to this view of the question, from the doctrine of final causes, and a false conception of the creation, scarcely merit remark. They are notoriously opposed to fact; as daily refuted by the production and propagation of varieties, which, if such objections had any *force*, could have no existence in nature. It may

be, on the contrary, with much greater probability maintained, that those causes are arbitrarily limited, or totally misconceived, in any view, that excludes the gradual production of species, from the progressive development, which the varieties that arise under our observation, in the animal and vegetable kingdoms, place beyond controversion. Nor have any stronger objections been urged against this conclusion, from the actual state, or the observed process of nature. Those advanced by Baron Cuvier, have no force, which they do not derive from an assumption of the point in dispute; and are besides merely opposed to the extreme supposition, that all the specific differences, by which animals are distinguished are the product of circumstances. *Voy. Règne Anim. Introd. tom. i. p. 16. sq.* The middle opinion, in which I cannot but acquiesce, is, on the contrary, supported on the palpable facts; that differences arise, in the varieties that originate among domesticated animals, equivalent to those by which the species of wild animals are distinguished; and that the accident of domestication, in the case of many of those animals among which such varieties arise, is resolvable into the mere circumstances of pairing, climate, and food, in which nature has placed no essential difference between the wild and tame species.

P. 308. l. 28. Until we have ascertained the final causes, for which many species of animals have been formed, and in subservience to which they perform their part in the economy of nature; the speculation employed on the mode of their origin and distribution over the earth may be urged in support of the most opposite conclusions.

Dr. Prichard, who espouses the notion of different centres of creation, in opposition to the notion of dispersion from a common centre, justifies his opinion, on the distinction and permanence of species by the following observations. “The
“ distribution of these species to particular habitations, ac-
“ cording to their physical properties, is evidently a part of
“ the provision of nature for replenishing the earth with or-
“ ganised inhabitants, placed every where according to the

“ congruity of soils and temperatures, with their structure
 “ and habitudes. But why is it to be supposed that the in-
 “ fluence of this law of adaptation has stopped here? Is it
 “ not probable that the varieties which spring up within the
 “ limits of particular species, are farther adaptations of struc-
 “ ture to the circumstances under which the tribe is destined
 “ to exist. Varieties branch out from the common form of
 “ a species, just as the forms of species deviate from the
 “ common type of a genus. Why should the one class of
 “ phenomena be without end or utility, a mere effect of con-
 “ tingency or chance, more than the other?” Phys. Hist.
 ut supr. vol. ii. p. 570. Surely this reasoning concludes no
 less forcibly, for the creation of a limited number of species,
 and the production of others, from them, by intermixture
 and crossing; according to the circumstances of the climate
 and haunts through which they continued to be gradually
 dispersed. Why it may be asked in continuation of the
 same reasoning, should the law of adaptation find a limit at
 the point where the argument stops? Why should not the
 intermixture of species, under the same circumstances, be
 equally productive of new species, as of new varieties?
 Why atleast should not the influence which the change of
 haunt and climate positively exerts over the same species,
 be so far efficacious on their progeny, as to give perma-
 nence to these varieties, which we may almost multiply at
 will? As the determination of the final causes,—by which
 alone this indecision can be obviated, in reasoning upon
 such points,—is exclusively attainable through Revelation;
 in a question, which, independant of its decision, is nearly
 balanced, its authority is surely competent to turn the scale.
 On which side it has declared itself, cannot admit of a doubt,
 if I have not wholly mistaken its meaning.

P. 309. l. 25. “ It is wisely remarked,” as Mr. Penn ob-
 serves, “ in a passage cited from Camper by a writer whom
 “ I have recently quoted, That it is not contrary to the Di-
 “ vine Wisdom to ordain *the cessation of animal species*,
 “ when they had entirely fulfilled the purpose for which

“ they had been created, although that purpose is unknown “ to us.” *Comp. Estim.* vol. ii. p. 136. b. It is matter not merely of vague speculation, but of actual observation, that the existence of the raptorial species is wholly inconsistent with the progress of civilization; and that if not capable of being brought in subjection to man, and made subservient to his purposes, their numbers are gradually exhausted by his hostility, until they become altogether extinct. If we adopt that supposition, which seems to be as plainly warranted by experience, as it is recognised by Revelation, that the earth was intended principally for his habitation; they fulfil the end of their being, in preventing, in those regions which are not reduced to his dominion, the too rapid and extensive increase of the species, that are necessary to his wants; and which their ravages cannot exhaust without involving them and their victims in a common destruction. But wherever he enters on possession, so much of the economy of nature is placed exclusively under his control: while their extermination or expulsion is consequently effected, the animals which constitute their prey, are reduced or multiplied by his agency, just as his purposes may require. It has thus become matter of merely historical certainty, that the wolf was once formidable in England, the bear in Egypt, the lion in Macedonia, and both bear and lion in Palestine. *Vid. Herod. lib. ii. cap. lxvii. lib. vii. cap. cxxvi. 1 Sam. xvii. 34. Bochart. Hieroz. par. i. lib. iii. cap. i. col. 720.* Had not the elephant become amenable to the authority, and subservient to the purposes of man; it is probable we should have no stronger evidence that he once inhabited Asia, than we now possess, that the Mastodon lived in America or Siberia.

P. 309. l. 30. There is less authority for supposing, that some of the extinct species perished altogether in the Deluge, than that they have been since exterminated in the process of nature, or by the agency of man. The prevalence of the pachydermata before the Deluge, forms a striking contrast to their deficiency at the present day: it is indeed singular,

that while the order at present amounts but to ten genera, the elephant, tapir, rhinoceros, hippopotamus, daman, hog, peccary, phascolæus, babiroussa, and horse, the researches of the geologist should have discovered evidence of several others, which are wholly extinct. “Pachydermatous animals,” observes Dr. Prichard, “seem to have been much more abundant in a former age of the world than they are at present. Besides the mastodont of the Ohio, two genera, containing several species, have been discovered by Cuvier. If we can judge from the contents of the gypsum-beds around Paris, it would seem, that in some distant age, the chief inhabitants of a part of Europe were the different species of anoplotheria and palæotheria.” Phys. Hist. ut supr. vol. i. p. 72. b. If, as it appears, these animals were wholly unserviceable to man, it should surely excite as little surprise, that their bones and his should not be found buried together; as that they should have sought a haunt, and deposited their remains in a region, which, as unfrequented or desert, left them nothing to apprehend from the hostility of their natural foe. And if the number of those animals, which have not disappeared, is found to be nearly commensurate with their utility, as is particularly manifest in the elephant and hog; it is surely unreasonable to look beyond a cause, thus adequate to answer every condition of the problem, for a solution of any difficulty which a view of either state of those animals may involve.

P. 310. l. 7. Of the fossil remains of those organised beings, which are deemed extraneous from the soil in which they are now found, part has been apparently thrown up under the agency of the Deluge, by the neighbouring waters, part ejected from the bottom of the contiguous seas, and part drifted on its surface, from distant shores. “Brocchi and Reniere,” observes Mr. Greenough, “think that many of the shells found *at the foot of the Appennines*, which have been deemed peculiar to the East Indies, Africa, America, and different seas in Europe, now exist in the

“Adriatic. Poli has found, *in the bay of Naples*, many shells, and Maratti, many zoophytes and madrepores, which are usually considered to be the productions only of distant seas.” Crit. Exam. ut supr. p. 299. b. “It is very probable,” as M. Pallas observes, “that the *ammonites and belemnites*, of the originals of which we are ignorant, are merely unknown to us, because they cannot live unless at profound depths. Their abundance in clay beds below calcareous strata furnishes a proof of the fact. . . . The productions which are regarded as peculiar to distant seas are generally the same in the northern seas, but are only produced in its lowest depths, because their existence seems to require the pressure of an immense body of water.” Obs. sur les Montagn. p. 33. et n. “As we still remain ignorant,” observes Cuvier, “of the greater part of the *testaceous animals and fishes*, which live at an extensive depth in the ocean, it is impossible to know with any certainty, whether a species found in a fossil state, may not still exist somewhere alive.” Theor. §. 24. comp. Penn, Comp. Estim. vol. ii. p. 47. n. It is not impossible, that the other fossil species, which are known to exist only in shallows, have once lived in the vicinity of the beds where they are now found; although their present location would seem to imply that they had been transported thither from distant climes. “Among the genera which belong to the *saurian*, or *lacertine reptiles*, Africa possesses the *monitors* The *iguanas* and *jackos* are more numerous and more widely dispersed; some species are natives of South America, others of different parts of the old Continent.” Prichard, ut supr. vol. i. p. 73. d. The evidence of diluvian agency,—by which they have been transported to the situation they at present occupy,—notwithstanding remains, in the manner in which they are intermixed in the secondary beds. Comp. Greenough, supr. p. 464. d.

P. 311. l. 22. Conf. Herod. lib. ii. cap. ii. Diodor. Sicul. lib. i. p. 9. al. 6. d. p. 46. al. 32. b. Justin. Histor. lib. ii. cap. i.

LECTURE VIII.

P. 314. l. 23. Whiston, *New Theor.* b. iv. ch. iv. p. 428. d. comp. p. 119.

P. 315. l. 1. Bochart, *Hieroz.* par. ii. lib. i. cap. vi. col. 29. l. 19.

Ibid. l. 5. *Id.* *Geogr. Sacr.* lib. i. cap. iv. col. 23. l. 34.

Ibid. l. 17. *Id.* *ibid.* cap. iii. col. 18. l. 55.

Ibid. l. 29. *Id.* *ibid.* et col. 19. l. 2.

P. 316. l. 21. Michael. *Spicil. Geogr. Hebr.* par. ii. p. 145.

P. 317. l. 2. *Gen.* ix. 26, 27. The promise of extension was given to the race of Japhet; of religion to the progeny of Shem; but the curse of slavery was pronounced on Ham's descendants: vid. S. Chrysost. in *Genes.* Hom. 29. p. 324. Theodorit. in *Genes.* Qu. 58. p. 47. Bochart, *Geogr. Sacr.* lib. i. cap. ii. col. 10. The race of Japhet have not only occupied Asia, but have extended themselves into Europe, and peopled America. By the descendants of Shem, Judaism and Christianity have been established; and the corruption of both religions has been widely propagated in Mohammedism. From the sons of Ham, by whom Africa has been peopled, the slaves of the Old and New World have been immemorially draughted.

Ibid. l. 15. Although the most ancient nations of the earth, were called after the names of the grandsons of Noah, the tradition of their more remote descent, from his three sons, was not forgotten by those who preserved any memorials of their original. In conformity to this remark, it is observable the Greeks took their name from Javan; while it is generally admitted, they were derived from Japhet; see Bochart. *Geogr.* lib. iii. cap. iii. col. 153. Michael. *Spicil. Geogr. Hebr.* p. 39. d. They were, of consequence, fully aware, that the line of their descent commenced with Japetus. His great grandson Hellen, they considered the father of Æolus, Dorus, and Xuthus, from whom they supposed they were directly descended: vid. Simson. *Chron.*

par. i. Japet. Progen. p. 61. Hellen. Progen. par. ii. p. 106. While they thus recognised no ancestor prior to Japetus; they employed the term *Japetian*, to designate any person or thing of the highest antiquity; Bochart. *ibid.* col. 147. l. 35. With the name of the founder of their race, they preserved the remembrance of the principal circumstances in his history; though they lost the knowledge of the order in which they happened. Thus, while they were conscious, that the Deluge had occurred about the times of Japetus, and knew that he was not the principal agent in that catastrophe; as they recognised no progenitor antecedent to him, they naturally supposed that it must have occurred under one of his descendants, and consequently supposed, that it happened under his grandson Deucalion. The same inversion in the chronological order of events is apparent in the account of the Titans, by which name the entire race was termed, as the sons of the earth; in the fables respecting whom they preserved memorials of the antediluvian giants; Voss. *Idol. lib. iii. cap. ii. p. 369. a. Nat. Com. Mythol. lib. vi. cap. xx. p. 642.* For their daring exploits they found an explanation, in the spirit of astronomical discovery, by which that age was distinguished; which they asserted to be all that was meant, in the account of the Titans' invasion of heaven. Pausan. *Corinth. p. 54. l. 26.* They adhered even more closely to the truth, in fixing the seat of the early Japetic race on Caucasus, where we are infallibly assured the sons of Japhet were really settled: there they conceived Prometheus, whom they considered the eldest son of Japetus, suffered the penalty of his ambition. *Nat. Com. lib. iv. p. 316. c.*

The same facts may be asserted in substance of the Egyptians, when Hamon is substituted for Japetus, and the settlement of his descendants is supposed to be fixed in Egypt, instead of on the confines of Scythia. From what has been already stated, on the race of gods and demigods, as identified with "the sons of God" and the offspring of their union with "the daughters of men;" and on the connexion of the

epoch of their alliance, with the first discoveries in astronomy; it appears, that the parallel extends to every particular, in which a resemblance may be required. The person in whom the entire line was supposed to end, they termed *Hamon*; who thus agrees with the Ham of Scripture, in being the last of the antediluvian race, and who is uniformly identified with the patriarch, by the most learned interpreters of heathen mythology. Marsham, ut supr. p. 11. d. 30. b. Bochart, ut supr. col. 5. l. 54. 7. l. 20. Vossius, ut supr. p. 101. d. As in the preceding case, and for the same reasons as the Japetians; by inverting the order of events, the Hamonians considered Menes, who was identical with Noah, the immediate successor of Hamon, instead of his predecessor. While in thus placing Ham at the head of the line of mortals, who presided in Egypt, they admitted him to be the founder of their race; they conceived he imparted his name to that country, which, it admits of no doubt, the descendants of that patriarch had originally peopled. Bochart, Vossius, &c. *ibid.*

Of the first settlements of the Shemitic race, we likewise obtain through themselves, accounts which are more full and accurate; but which, under the peculiar privileges to which they were admitted, are preserved in the sacred writings, of which they were chosen to be the depositories. From the Arabs, who were a separate branch of this race, and who are celebrated for the fidelity with which they preserve the ancient names of persons and places; (Prid. Connex. vol. i. p. 81, 82.) the descent of the natives of Syria from the patriarch Shem is very fully attested. A traveller, whose testimony will not be received with suspicion, from the undue partiality which he betrays to the sacred writings, assures us, that even at the present day, the origin of the Shemitic branch of Noah's descendants is acknowledged in the common appellation. "The Arabs," he observes, "say "*Oulad Masr*, the Egyptians, *Oulad Sham*, the Syrians, " . . . a remark which is not unimportant in Ancient History." Volney. Trav. in Egypt and Syria, vol. i. p. 401.

Under this denomination, it appears to one of the most learned inquirers into this subject, the entire Shemitic race should be properly included. “The principal family of nations,” observes Dr. Prichard, “whose abodes are found to have been, from the earliest times, within these limits, are *the ancient Syrian*, Hebrew, and Arabian tribes, or that class of nations, connected most obviously by affinity of languages, to which Eichorn, and after him many philological writers, chiefly Germans, have given the name of *Semitic nations*. Besides the Semitic races, whom I should prefer to term *Syrian* or *Palæ-Syrian*, the name of *Syrian* having been used by the ancients nearly in the same acceptation,” &c. *Phys. Hist.* ut supr. vol. ii. p. 206. d.

In the concomitant term *Masr*, which is retained with *Shem* in the preceding extract, we have the happiest illustration of the traditionary fidelity of this people, in preserving the names of ancient nations; and a plain exemplification of the manner in which those names have descended from the second rather than the first generation of Noah’s descendants. “This capital (Grand Cairo) does not in this country,” observes a traveller of the same nation, “bear the name of El-Kahira, given it by its founder; the Arabs know it only by that of *Masr*, which has no known signification; but which seems to have been the ancient Eastern name of the lower Egypt.” Savary, *Trav. in Egypt and Syr.* ch. xvi. p. 233. Conf. Bochart, ut supr. lib. iv. cap. xxiv. col. 258, 62. “This name *Masr*,” the same traveller adds in a note, “has the same consonants as the *Mesr* acknowledged by the Hebrew; which on account of its plural form, seems to denote the inhabitants of the Delta, while those of the Thebais are termed *Beni Kous*, or children of Kous.” We have here plainly preserved the names of Cush, and Metzraim, the two eldest sons of Ham, from whom the Egyptians and Ethiopians were descended; and of whom accounts were preserved in the Babylonian archives, in every respect correspondent to the statement

of Scripture ; Gen. x. 6. 8. 13. Eupolem. ap. Euseb. Præp. Ev. lib. ix. cap. xvii. p. 419. c. Bochart, ut supr. lib. iv. cap. ii. col. 210. 8. It is indeed objected by Bochart, that Mizraim, on account of its dual form, cannot be the name of a man ; and that it designates the division of Egypt into Upper and Lower ; Ibid. col. 258. 58. col. 259. 33. So it is probable the Masorets were of opinion, in whose pointing the dual form probably finds its only authority. The objection of Bochart to such a form in proper names, although espoused by Michaelis ; (Bochart, ut supr. col. 164. 1. Michael. ib. p. 2.) is not founded on the general principles of language, nor borne out by the uniform analogy of the Hebrew. The name Ἰωραῖμ, preserved by St. Luke, iii. 29. is perfectly analogous to Μετσαρῖμ, or Μεστραῖμ, preserved by Eupolemus, and both names are applied by both writers to individuals : the former name is written in Hebrew יאוריִם, which literally signifies *Waters* or *Rivers* ; we at once recognise the absurdity of the objection when applied to the last names, which are of common occurrence in English ; and it is fully as apparent, when applied to the former, as occurring in Hebrew. It may be, in fine, observed, that in the testimony of Eupolemus we discover the cause of the limitation of the name Shemitic to a small part of Shem's descendants. Conf. Suid. ap. Bochart, ut supr. col. 73. l. 35. This race having become subject to the usurper Nimrod, who traced his descent from Ham ; their paternal name was lost with their independence, and finally merged in that of their conqueror. See Prichard, ut supr. vol. ii. p. 210. d. conf. Bochart, ut supr. col. 301. l. 46.

P. 317. l. 16. The distribution of the three races is given by Dr. Simson, after Josephus, in the following passage ; the extent which he ascribes their settlements must be, however, understood of an era long subsequent to the time of the Dispersion. “ Idem Josephus et Christiani scriptores
 “ eum secuti, volunt, filios Japhet à Tauro et Amano, Ciliciæ
 “ et Cœles-Syriæ montibus, omnia ad Tanaim usque fluvium
 “ occupâsse in Asiâ, et à Tanai usque ad Gaditanum fretum

“ in Europâ, videlicet, totam Europam, et Magnam Asiæ
 “ partem : Chami vero filios totam Africam et partem Asiæ :
 “ Semi posteris reliquas Asiæ regiones ab Euphrate usque
 “ ad Indicum Oceanum, cecidisse.” Chron. par. i. p. 11. c.
 Among the parts of Asia which were occupied by the
 Hamonians, the region inhabited by the Canaanites is justly
 included ; vid. Bochart, ut supr. lib. iv. cap. xxxv. col. 301.
 Prichard, ut supr. vol. ii. p. 208. d.

P. 317. l. 24. See note on p. 325. l. 25.

Ibid. l. 28. See note on p. 325. l. 22.

P. 318. l. 2. See note on p. 325. l. 23.

Ibid. l. 28. See note on p. 291. l. 4.

P. 319. l. 4. The substance of the opinions of the French
 and German naturalists on this subject is stated in the fol-
 lowing passage ; “ Of the numerous varieties of the human
 “ race, Cuvier mentions three eminently distinct ; viz. the
 “ white or Caucasian, the yellow or Mongolian, and the
 “ negro, or Ethiopian. Blumenbach conceives they may be
 “ divided into five distinct varieties ; viz. the Caucasian,
 “ Mongolian, Ethiopian, American, and Malayan.” Stark,
 Elem. of Nat. Hist. vol. i. p. 38. comp. Cuvier, Règne Anim.
 tom. i. p. 80. Blumenb. Nat. Hist. p. 35.

Ibid. l. 11. The position of Caucasus as the *officina gen-
 tium*, and the sanguine temperament of the Caucasian vari-
 ety, not less than the common consent of physiologists
 concur in pointing out the region in which mount Ararat
 rises, as the nursery of our species. “ The Caucasian,” ob-
 serves Blumenbach, “ must on every physiological principle,
 “ be considered as the primary or intermediate of these five
 “ principal races. The two extremes, into which it has de-
 “ viated, are on the one hand the Mongolian, on the other
 “ the Ethiopian. The other two races form transitions be-
 “ tween them ; the Americans between the Caucasian and
 “ Mongolian, and the Malayan between the Caucasian and
 “ Ethiopian.” He rejects as fables (ibid. p. 38. d. and n. †.)
 the natural deficiency of beards among the Americans ; al-
 though he admits a difference in the strength of the growth

of hair in the Mongolian and Malayan races. Nat. Hist. p. 37. Comp. Fodéré, Phys. Posit. §. 1014. 1027. sq. tom. iii. p. 467. 479. sq. From the time of the irruption of the Gothic hordes, the region, situated between the Euxine and Caspian seas, in which this race is placed, had obtained the title of the *officina gentium*. Evidence of their early settlement and wandering habits has been however elicited by Michaelis, and deduced from the time nearly of the Dispersion.—“hic invenisse veri micam videor: Phalegi, aliorumque Abrahami majorum versus Boream, Pontum inter Euxinum et Mare Caspium, haud procul à Scythiâ, vel potiùs in Scythiâ Asiaticâ, Europæque viciniâ, vagas Nomadum more sedes.” Spic. ut supr. par. ii. p. 148. a.

P. 319. l. 15. The attempt to divide the human race into different *species* is rejected by the common consent of the most skilful naturalists. “Some French naturalists,” observes M. Stark, “have endeavoured to raise the varieties now observable among the human race into different species; but as Cuvier justly remarks, the indiscriminate sexual intercourse and consequent production of an offspring capable of propagation prove mankind to be but a single species. And it is remarked by Blumenbach, that all natural differences in the form and color of the human body are not more remarkable, nor more inconceivable, than those by which varieties of so many organised bodies, and particularly of domestic animals, arise as it were under our eyes.” Nat. Hist. ut supr. p. 39.

Ibid. l. 25. Blumenbach, ut supr. note on l. 4. and 15. By this celebrated naturalist these five races are again split into subdivisions, which are covered by the same observation: “Each of these five races,” he declares, “includes two kinds of people which are more or less strikingly distinguished by their form. Thus, for instance, the Hindoos may be considered as a subdivision or secondary race, distinct from the Caucasian; the Chinese and Japanese from the Mongolian; the Hottentots from the Ethiopian, the North Americans from those in the southern part of the

“ New World ; and the black Papoos of New Holland, &c.
 “ from the brown Otaheitans and other islanders of the Pa-
 “ cific Ocean.” Nat. Hist. ut supr. p. 37. n. *.

P. 319. l. 28. If the notion of some modern writers be admitted, that the colonization of Malacca, by the Malays from Menangkabau in Sumatra, occurred A. D. 1160 ; as the maritime habits of this people must be dated from their settlement on the continent, the colonies which they continued to disperse from that region through Polynesia must have been comparatively recent. See Marsden, Hist. of Sumatra. Prichard, ut supr. vol. i. p. 438. From the inquiries into the origin of the American nations, it appears that their antiquity does not extend higher. The descent of the Aztecs, or ancient Mexicans, from Aztlan to Anahuac, is referred to the same year by Clavigero. Nor does it appear probable, from the rate of population, or the progress of arts and civilization in America, that the antiquity of this people can be assigned a higher date. See Ranking, Hist. Research. ut supr. p. 279. 464. From every thing which can be collected of the early state of these different races, the Malays and Americans, it clearly appears, that they are of Mongolian extraction. It has been conjectured, with great probability, that in the convulsions with which all Asia was shaken, by the conquests of Genghis Khan and his successors, for above a century, from the same period, multitudes of the natives were driven for security, to the continent of America, into which numbers of their ancestors had been driven previously, by the incursions of the Huns and Turks into the north of Tartary. Ranking, *ibid.* p. 269. n. It is not improbable, that the dispersion of the Polynesian races from Asia, had proceeded from the south at both periods. Under every view, therefore, the emigrants from both extremities of the continent were, obviously, by descent Mongolians.

P. 320. l. 17. Voy. Abel-Rémusat. *Récherch. sur les Lang. Tartar. Disc. Prélim.* p. xxxvi. Prichard. *Phys. Hist.* b. vii. ch. ix. vol. ii. p. 329. The objection, it

must be, however, observed, applies only to the *terms* Tatar and Mongolian; “The same physical characters,” as Dr. Prichard admits, “being common to all the nations of this part of the world, seem strongly to denote a connexion between the local circumstances or the physical state of the regions in which they appear, and the phenomena displayed in the organization of the human species.” “It must however be observed, that most of the races we have described, are believed on certain or probable grounds, to have had their origin, and to have grown into nations, if we may be allowed the expression, in different parts of the great elevated steppe which forms the centre of Asia. From their original seats they may have descended, many of them at least, at a comparatively late era, to occupy the various countries where they are now dispersed.” *Ibid.* p. 330. c.

P. 321. l. 23. See Prichard. *ibid.* b. v. ch. xi. p. 202. d.

P. 322. l. 29. Vid. Jul. Klaproth. *Asia Polyglotta*, p. 16.

P. 323. l. 24. S. Epiphan. *Hæres.* lxvi. cap. lxxxiii. *Ancor.* cap. cxiv. Philastr. *Brix. Hær.* cxviii. *Syncel. Chron.* p. 45. b.

Ibid. l. 26. Michael. *Spicil. ut supr.* p. 5. d. It must be observed, however, that the error of the ancients is greatly exaggerated in this objection. There is nothing improbable in the supposition, that Noah, from a particular spot in Armenia, should have pointed out the different quarters of the world, into which the families of his sons should spread themselves, in extending their colonies, with their increasing progeny. So much, indeed, appears to be implied in the “division of the earth” among his sons, as stated in scripture.

P. 324. l. 1. Michael. *ibid.* “Nec verò omnes qui ubique cunque per totum terrarum orbem fuerunt, populos enumeraturus mihi Moses videtur, sed eos qui terram cognitam habitabant. Cognitam autem eam dico, quæ Israelitis, Ægyptiis ac fortè Phœnicibus cognita erat. Fac,

“ illum divino adflatu, non dicam quam inutili geographiæ
 “ prodigo, aliarum quoque gentium, quæ Israelitis, Ægyptiis,
 “ ac fortè Phœnicibus incognitarum nomina scivisse,
 “ cujus illa usui in scripta retulisset. Certè intelligi a lectoribus non potuisset, nisi indicato cœlo sub quo hi incogniti populi degerent, sed de quo tacet, ut de gentibus loquens solo ex nomine faciliè agnoscendis. Quod si cui nostrum divinitus contingeret nomina gentium ignotarum sub australi cœlo nôsse, quàm ille ridiculâ versaretur in diligentia, omnia ea nomina geographiæ intexens, sed subticens, ubi cœli terrarumque quamlibet gentem, novo et incondito nomine vocitatum, quærere fas est.”

P. 324. l. 7. Gen. x. 18.

Ibid. l. 18. Gen. xxxvii. 25. On the subject of this early communication, it is justly observed by Dr. Vincent; “ Petra was the point to which all the Arabians traded from the three sides of their vast peninsula: here upon opening the oldest history in the world we find the Ishmaelites, from Gilead, conducting a caravan from Hadramaut, and in the regular course of their traffick, proceeding to Egypt for a market. The date of this transaction is more than seventeen centuries prior to the Christian era; and notwithstanding its antiquity, it has all the genuine features of a caravan crossing the desert at the present hour.” *Peripl. of Erythr. Sea*, vol. ii. p. 234.

P. 325. l. 16. Gen. x. 2. 6. 22.

Ibid. l. 22. Bochart, *Geogr. Sacr. lib. iii. col. 147. sq.*

Ibid. l. 23. Id. *ibid. lib. iv. col. 203. sq.*

Ibid. l. 25. Id. *ibid. lib. ii. col. 65. sq.*

Ibid. l. 28. Vid. eund. *ibid. cap. xii. col. 83. conf. col. 87. l. 16.*

P. 326. l. 28. It is indeed justly observed by Michaelis, that the description given by Moses of the different regions, preserve a fulness and accuracy in proportion to the nearness at which they were placed from his own place of resort. “ Video autem Mosen de populis, proximâ cognatione Israelitis attingentibus, ut de Arabibus Joctanitis, paulò

“ referre copiosius, deinde et de *Ægyptiorum* et *Phœnicum*
 “ coloniis, denique et de *Europæ* maritimis, quæ navigati-
 “ onibus *Phœnicum* patefacta erant. Nec de adcolis maris
 “ *Caspîi* ab Oriente et Occidente silet, quæ regiones, illa
 “ maximè quæ ab Oriente latè porrigitur, celebriores olim
 “ quam nunc sunt fuisse videntur: sive soli felicitate quæ
 “ eximia laudatur, sive commerciorum cum *Indiâ* commodi-
 “ tate. *Indiam* ipsam, *Hebræis* יִרְדֵּן dictam, (*Esth.* i. 1.
 “ viii. 9.) non nominat unde multò minùs de remo-
 “ tioribus, ut de *Sinâ* sperandum, nisi alio sub nomine *In-*
 “ *diam* latere præstruxeris. Occidentem versus ultra *Tar-*
 “ *tessum* non pergit: non occidentalia *Africæ*, in regione
 “ torridâ, non *Europæ* litora septentrionalia lustrans, illâ
 “ summâ antiquitate, aut vasta adhuc et inculta, aut si ultra
 “ *Phœnices* navigârunt, dissimulata et silentio celata.” *Spicil.*
 ut supr. p. 7. d. The singular accuracy, with which the
 sacred historian delivers himself on the subject of the Arabs,
 might be identified in the existing state of that people, if
 not at the present day, for an incredible period. “Little
 “ respect,” observes Dr. Vincent, “as has been paid to the
 “ genealogies of the Scripture by some of the writers of the
 “ present day, it is still to be considered that the Bible may
 “ be tried by the rule of history as well as inspiration, and
 “ that the traditions of the Arabians are in harmony with
 “ the writings of Moses: for they as universally acknowledge
 “ Joktan the fourth from Shem as the origin of those tribes
 “ which occupied Sabêa and Hadramaut, that is, Yemen and
 “ the incense country; and Ishmael the son of Abraham, as
 “ the father of the families that settled in Hejaz, which is
 “ Arabia Deserta; as they do Edom for the ancestor of the
 “ Idumeans, who occupied Arabia Petrea. These form the
 “ three general divisions of this vast country and nation, as
 “ extraordinary for the preservation of its manners as its
 “ liberty; and which is continuing at this day to fulfil one of
 “ those prophecies which assure us of the truth of that His-
 “ tory in which these families are recorded.” *Peripl.* ut supr.
 p. 235. It must be, however, allowed, for the reasons pre-

viously stated, that Moses, in delivering himself with a precision thus circumstantial, was influenced by the capabilities which his countrymen possessed for receiving information: see note on p. 324. l. 1.

P. 327. l. 17. The limits within which the inhabited parts of the earth were contained, in the times of Moses, may be collected from the extent which they had attained, about one thousand and fifty years later, in the age of Herodotus. The means of inquiry which this historian possessed were ample, in consequence of the intercourse of his countrymen with the Persians, who had extended their arms over the civilized world, and employed the Phenicians in many perilous voyages of discovery; (Herod. lib. iii. cap. lxxxix. p. 192, 2. sq. lib. iv. cap. xlii. xliii. p. 237. 33. sq.) and by means of the colonies which the Greeks had settled in the northern regions of Europe; (Id. lib. iv. cap. xviii. p. 231. 16. cap. li. p. 241. 19.) The extent which he ascribes Europe and Asia, is contained within a narrow compass: (vid. lib. iv. cap. xxxvi. p. 236, 27. sq.) In representing Asia as terminating to the east with India, (id. cap. xl. p. 237, 15.) he merely speaks of the latter country as extending along the banks of the Indus, and as not exceeding Thrace in size, (id. cap. xliv. p. 238, 44. cf. lib. iii. cap. ci. p. 203, 4. cap. cvi. p. 204, 15. lib. v. cap. iii. p. 290. l. 7.) describing all beyond this region as desert: (id. lib. iv. cap. xl. p. 237. l. 15.) All to the north of the Danube, Tanais, Borys-thenes, and Wolga, he represents as equally destitute of a fixed population: (id. lib. v. cap. x. p. 292, 25. lib. iv. cap. xvii. p. 231, 11. xviii. p. 231, 35. c. p. 257. 10.) Africa he likewise represents, as found desert by the Phenicians, by whom it was circumnavigated: (id. cap. xliii. p. 238, 3.) the inhabited parts not having extended far beyond Egypt, into Ethiopia: (id. lib. iii. cap. xcvii. p. 201, 28.) Of the Scythians, he speaks as extending along the north of the Euxine to the Tanais (id. lib. iv. cap. c. ii. p. 215. l. 8. sq. cf. Rennell. Geogr. Syst. of Herod. p. 46. sq.) but above this region only a few wandering tribes seem to have penetrated,

leaving all beyond it a desert : (id. lib. iv. cap. xviii. p. 231, 23.)

P. 328. l. 7. It is sufficient for my purpose to have shewn, that the pure races, which are accounted threefold, were respectively descendants of the three sons of Noah. As the patriarch and his sons were of the primitive variety, which is admitted to have been that distinguished as the Caucasian; no more is necessary to my object, than to have shewn, that they were at first collectively settled in the region so termed; from whence it seems to follow, that their complexion was inherited, for some generations, by their respective descendants. This is equally apparent in the accounts of their dispersion and settlements; the progeny of Gomer, Javan, and Madai, the sons of Japhet,—and of Canaan, if not of Misraim, the sons of Ham,—having been of the fair variety. It is, on the other hand, not necessary to point out the time and place, when the negro and the yellow variety arose in our species. All that is requisite, is merely to shew, that the former is of the race of Ham, and the latter of Japhet: and this fully appears from their respectively occupying the regions where the descendants of those patriarchs were exclusively settled: who passed into the north-east of Asia and the south-west of Africa, which they still continue to inhabit. Judging from the early names of the different people, distinguished as first exhibiting the Ethiopic and Tartarian countenance and color; it would appear that the former arose in the line of Cush, Ham's eldest son, and the latter in that of Magog, Japhet's second; and that the peculiarity by which they were respectively distinguished, appeared in the former line, much more early than in the latter. As these peculiarities are to be found generally associated with climate, it would thus seem probable, that to the mere accident of the families of these different lines having passed into those regions, which exercise an influence over the complexion and features, the varieties in our species mainly owe their existence. The distance to which they were removed, and the circumstances by which they were

kept apart from the mixed race, that was attracted to the more genial and central regions of the earth, tended to originate and perpetuate the varieties by which they are characterized; and which have disappeared in the mixed race, that has been drawn together in the more populous and civilized regions of Asia and Europe. To these observations we may add, that the intense cold of the one region and the oppressive heat of the other, would not merely possess an influence in blanching or darkening the complexion, but in contracting or dilating the features; and might thus assist nature in originating those peculiarities, which have become hereditary and national, by time and segregation.

P. 329. l. 2. Vid. Bochart, ut supr. lib. i. cap. viii. col. 32. sq. Gale, Court of Gent. b. iii. ch. viii. p. 83. c. Pri-
chard, Phys. Hist. of Man, vol. ii. p. 593. East. Orig. of
Celt. Nat. p. 11.

Ibid. l. 10. 11. 14. Gen. x. 32. 10. 11. The common version of the last cited text is asserted by Michaelis, against Bochart; ut supr. lib. iv. cap. xii. col. 229. c. He justly observes; “egressus est *in Assyriam*, dicturus Moses, non אשור, sed אשורה, cum He locali, scripturus fuisse videtur.” Spicil. ut supr. p. 236. a.

Ibid. l. 23. 26. Gen. xi. 1. x. 32.

Ibid. l. 28. Ibid. xi. 2.

P. 330. l. 16. Perizonius, who seems rather to take the force of the original, from the Greek σῆμα, rather than the Hebrew שם, which signifies *name, reputation*, thus understands the passage: Orig. Babyl. cap. xi. p. 193.

Ibid. l. 25. Some doubt is cast upon the scripture narrative, from the derivation of Babel, in Gen. xi. 9. by a modern philologist. He thus objects; “Der name Babel ist
“ ohne zweifel eine Zusammenziehung von Bab-bel, der
“ Hof des Bel, oder Belus, welcher der erste Erbauer dieser
“ Stadt war.—Babylon cujus mœnia bitumine Semiramis
“ struxit: *arcem* enim antiquissimus rex condidit *Belus*.
“ Ammian. Marc. lib. 23. Die Vulgata sagt (Gen. xi. 9.)
“ Et idcirco vocatum est nomen ejus (civitatis) Babel, quia

“ibi confusum est labium universæ terræ. Aber Babel
 “bedeutet weder im Hebraischen noch Chaldaischen *er hat*
 “*verwirrt*: und lässt sich auch nicht sprachrechtig von der
 “Hebraischen Wurzel בלל, *verwirren*, *ableiten*. Verwir-
 “rung müsste entweder בלילה, oder בלבוּל *bibul* heissen
 “(so nennen noch jetzt die Rabbinen Verwirrung;) oder
 “da בלל den zweiten Radical verdoppelt, so müsste *Ver-*
 “*wirrung* wörtlich entweder durch מבילה *mebilah*, oder
 “durch תבילה *tebilah*, nie aber durch Babel gegeben wer-
 “den.” I. Klaproth. Asia Polyglott. p. 40. n. There is no
 more reason, however, for accepting the derivation which is
 here so confidently offered, than for rejecting that which is
 so superciliously refused. The root בב is unfitted alike by
 its limited use, and inapposite meaning in the Oriental lan-
 guages, for supplying the etymology of the name; it is
 adopted merely in the Chaldee and Rabbinical dialect, from
 the Arabic, and has no signification but that of *gate*, which
 is nothing to the purpose. See also Prichard, Phys. Hist. of
 Man, ut supr. vol. ii. p. 602. It is sufficient for the justifi-
 cation of the received derivation, that the ב is retained in
 the root from which it is directly deducible; the Syriac
 having ܒܒܠ and the Chaldee בבל; comp. note to p.
 331. l. 18. In estimating this philological difficulty, by
 analogy, which supplies the only clue to guide us; we find
 that it was not merely common to the Oriental languages to
 elide one of the consonants, but proper to the Syriac to re-
 ject the first; thus the root גלל *volvit*, forms in Pihel גלגל
 analogous to בלבל; from whence the Hebrew takes גלגלת
gylgoleth, 2 Kings ix. 35. and the Syriac ܓܠܓܠܬܐ *gagultha*.
 John xix. 17. In like manner, from בלל *confudit*, comes
 Pihel בלבל, as preserved in Chaldee and Syriac; from
 whence, after the Syriac manner, on rejecting the first con-
 sonant, regularly comes בבל, or בבול, with the Greek ter-
 mination Βαβυλών. It is unnecessary to exhibit in a stronger
 light, than that in which it presents itself, the folly of the
 attempt to proscribe this name, as not regularly deducible
 in the Hebrew; the origin of which should be probably

sought in the ancient Assyrian, as it is coeval with the confusion of languages. And in fact, the other derivations of גלל, such as גלגל *galgal* in Hebrew, and ܓܝܓܠ *giglo* in Syriac, confirm the notion; that we should turn from the former to the latter, in which the primitive dialect may be supposed to be best preserved, for the proper etymology of the disputed term.

P. 331. l. 18. Gen. xi. 9. The *lips* are constantly used in Hebrew for *the organs of speech*; examples of which occur in Moses, Exod. vi. 12; Lev. v. 4; Deut. xxiii. 23. which I conceive to be the proper force of the term שפה as used in the preceding passage. In the Samaritan, Greek, and Latin, the phrase is literally rendered. Thus the Hebrew, בלל יהוה שפת כל הארץ is expressed in the Samaritan by ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ, Dominus confundebat *labium* omnis terræ; in the Septuagint, by συνέχεε Κύριος τὰ χεῖλη πάσης τῆς γῆς; Dominus confundebat *labia*, &c. and in the Latin, by “confusum est *labium* universæ terræ.” In the other Oriental translations and modern versions, the phrase is taken with greater latitude, and applied to the language, instead of the organs. Thus the Chaldee has בלבל יי לישן כל ארעה, confudit Dominus *linguam* universæ terræ; as also the Syriac, ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ ܕܡܢ, confudit Dominus *linguas*, &c. the Arabic, still more paraphrastic has بلبل الله لغة أهل الارض, confudit Deus *idioma*, &c. Of the modern versions, the English has, “the Lord did confound *the language* of all “the earth;” the French, “l’Eternel confondit *le langage* “de toute la terre;” the Spanish, “fue confundido *el lenguaje* de toda la tierra;” the German, “der Herr verwirret hatte aller Länder *Sprache*;” and the Italian, “il Signore confondè *la favella*.” In this instance, of course, as in those already noticed, the original possesses a philosophical truth, which disappears in the various translations.

P. 332. l. 24. See Prichard, ut supr. vol. i. p. 493. a.

P. 333. l. 29. Selden. de Dîs Syris Prolegom. cap. ii. p. 10. Gale, Court of Gent. b. i. ch. xi. p. 68. sq. Ravis, Disc. of Orient. Tong. p. 38. 78.

P. 334. l. 2. Prichard, ut supr. vol. i. p. 503. c. cf. vol. ii. p. 6. b.

Ibid. l. 7. This position may be easily verified in the permutable letters, by which the synonymous terms in the cognate Oriental dialects are convertible; lists of which may be found in the different grammars; vid. Michael. Gram. Chald. §. 2. p. 3. sq. Masclef. Gram. Heb. vol. ii. p. 2. sq. Alting. Instit. Chald. et Syr. §. 12. Othon. Instit. Samar. §. 12, &c. The observation of Danzius as concise and comprehensive may be taken to illustrate the position. “*Unius organi literæ, itemque quiescentes, sæpe alternant inter se, vel in eâdem linguâ, vel in vocibus ex Ebraismo derivantur*. In quâ derivatione insuper, Syri voces Ebræas suas faciunt, *commutantes*, ut Chaldæi, ו in ד, ל et נ in ר, מ in ל, צ in ט vel ע, ק in ט, ר in ל, et ש in ת, rarò ט.” Adit. Syr. Reclus. Obs. 1. 2. p. 2.

Ibid. l. 11. To this purpose, it has been justly observed by Gale; “A different dialect, in languages originally the same, is sufficient to constitute such a difference, as that the persons to whom each dialect belongs, may not understand each other, when they converse. This is evident in the Syrian or Chaldee language, which, as it is generally confessed among the learned, is but a different dialect of the Hebrew; and yet the vulgar Jews did not understand it: as appears from 2 Kings xviii. 26. ‘Then said Eliakim . . . speak I pray thee to thy servants in the Syrian language, for we understand it, and talk not with us in the Jews’ language, in the ears of the people that are on the wall.’ The like may be instanced in other languages, wherein different dialects render their discourses unintelligible.” Court of Gentiles, b. i. ch. xi. p. 66. d. On carrying up the observation to the time of the dispersion, it must be obvious, that by such dialectic peculiarities as have been noticed, the verbal communication of the speakers

would be as effectually precluded as if they spoke languages radically different.

P. 334. l. 19. Dr. Prichard, by whom the affinity between the Celtic and the Indo-European languages has been established, has observed, in noticing that existing between the Sanskrit and the Greek and Latin; “It is difficult to determine which idiom, the Latin or the Greek, approaches most nearly to the Sanskrit, but they are all evidently branches of the one stem.” *East. Orig. of the Celtic Nations*, p. 18. comp. *Phys. Hist. of Man*, vol. i. p. 501. sq.

Ibid. l. 30. Prichard, *Phys. Hist.* b. v. ch. i. vol. i. p. 491. sq.

P. 335. l. 6. *Id. ibid.* b. vi. ch. ii. p. 209. sq.

Ibid. l. 11. On the convertible sounds of the principal languages termed *Indo-European*, which may be referred to an affection of the vocal organs, ut *supr.* note to p. 331. l. 18; the observation of the learned philologist just cited may be adduced. After giving a table of the numerals in these languages, he observes; “I have only room to remark, that the most of the differences which occur in the above words are according to a regular method of deviation, which may be traced in many other parts of the vocabularies of the respective languages. Thus for the Sanskrit *ch*, the Greek substitutes *t*, the Welsh *p*, the Irish and Latin *k*, or *q*. A similar change gives us for the Greek *τῖς* and *τὸ*, in Latin *quis*, *quid*, and in Welsh *pw*,” &c. Prichard, *Phys. Hist.* ut *supr.* vol. ii. p. 622. A full table of these convertible letters is given by the learned author in his *East. Orig. of the Celt. Nat.* p. 41. d. 64.

Ibid. l. 15. Prichard, *Phys. Hist.* ut *supr.* vol. ii. p. 593. sq.

P. 336. l. 6. Bochart, *Geogr.* ut *supr.* p. 1. lib. iv. cap. xxxiv. col. 300. par. ii. lib. ii. cap. i. vi. col. 699. 720. sq. Gale, ut *supr.* b. i. ch. xi. p. 59. d. 67. c. Prichard, *Phys. Hist.* vol. ii. p. 209. a. 217. a.

P. 337. l. 13. Prichard, *Phys. Hist.* vol. ii. p. 592. sq.

Ibid. l. 28. *Id. ibid.* b. v. vol. i. p. 491. vol. ii. p. 206.

P. 338. l. 3. Id. ibid. p. 90. cf. p. 186. b.

Ibid. l. 8. Id. ibid. p. 180. c.

Ibid. l. 13. 17. Id. ibid. p. 34. 60. 82.

Ibid. l. 30. Id. ibid. p. 203.

P. 339. l. 9. Id. ibid. p. 197. 282. 334.

Ibid. l. 14. 25. 29. Id. ibid. p. 245. 331. 261. 333.

P. 340. l. 8. The elaborate investigation of the same learned philologist, is summed up in the following terms; "We may now venture, if I am not mistaken, to infer, that *all the principal branches* of the nations in *Europe*, including the Celtic, the German, the Slavonian, and the Pelasgian had *one common descent*, and sprang from the same stock, from a family of nations in *Upper Asia*, which gave birth also to the Medes, Persians, and Hindoos. That the marks of affinity between these several nations cannot be accounted for on any other principle, must be allowed by any person who adequately considers the different parts of their history." Id. ibid. p. 203. b.

Ibid. l. 12. Klaproth. *Asia Polyglott.* p. 1. 16.

Ibid. l. 18, 24, 28. Prichard, ut supr. p. 1. d. 6. d. 8. c.

P. 341. l. 5. Id. ibid. p. 7. a.

Ibid. l. 9. Id. ibid. p. 32. a. cf. vol. i. p. 503. b. sq. where the substance of Mr. Colebrooke's learned Essay on the Sanscrit and Pracrit Languages is extracted.

Ibid. l. 20. 24. Prichard, ut supr. vol. ii. p. 259. 268. 275. 299. 304. 307. 331.

Ibid. l. 30. Id. ibid. p. 330. c.

P. 342. l. 10. 14. Since the infamous labors of M. Dupuis, the project has been revived under different auspices, to deduce the origin of civilization and literature from Ethiopia, as distinguished from Egypt; in opposition not less to the civil than the physical history of mankind. From the ductile nature of the materials thrown into the mould, it may be readily conceived, by those who are conversant in such inquiries, they are susceptible of any shape which suits the fancy of the artificer. As the name Ethiopia was applied with reference to the complexion of the race, who occupied

the tract so termed; it was taken as one part of the triple division of the world; Strabo, Geogr. vol. i. p. 154. a. and thus contained the population extending from India to Libya, (Herod. lib. vii. cap. lxx.) and so expressly included Egypt. Eustath. Com. in Perieg. vs. 232. ἐκλήθη δέ ποτε [Αἴγυπτος] καὶ Ἀερία, καὶ ποταμία, καὶ Αἰθιοπία διὰ τοὺς ἐκεῖ αἰθιόπας. Thus consequently the early advancement of Egypt was placed at the service of the constructors of a hypothesis, on the early arts and civilization of *Ethiopia*.

As in the notion of the rise and progress of civilization it is implied, that a metropolis should somewhere exist, suited to the political consequence of the people to whom it is ascribed; *Meroe* has been accordingly discovered to be the centre of Ethiopic arts and polity. A tangible case thus presents itself, by which the tumid magnificence of these splendid visions of African glory may be easily dissipated. If credit be due to the testimony of history, no fact seems to be more fully attested, than that Cambyses founded this city, in his Ethiopic expedition, and termed it Meroe, after his sister. The accounts of the Greeks and Latins exhibit that circumstantial precision, which is an earnest and evidence of their accuracy. “Cambyses, filius æquè Cyri,” observes Ampelius, “qui cùm lxx millia hominum subegisset
“in Ægypto, et regem Amasin; *Æthiopiam profectus*,
“magnâ parte militum per famem amissâ, irritus rediit,
“*urbem tamen ibi condidit Meroem.*” Lib. Memorial. cap. xiii. conf. Diodor. lib. i. p. 29. al. 20. b. Joseph. Antiq. lib. ii. cap. x. p. 58. f. Herod. lib. iii. cap. xxv. The date of this event, which occurred B. C. 524, it is curious to observe, is coeval with the *destruction* of the national grandeur of Egypt: for in the expedition from which Meroe dates its rise, Thebes was reduced to a ruin; Diodor. ut supr. p. 43. al. 30. b. Eustath. in Dionys. ut supr. p. 36. d. Cf. Usser. Annal. p. 152. b. The Rameseion, which was then dismantled, and which remains, even in ruins, an imperishable monument of the national greatness of the Egyptians, has a calendar inscribed on its walls, which bears evidence

not only of the early scientific advancement, but the architectural skill of this people, as early as the year B.C. 1325:—just eight centuries before Meroe was even *founded*. See note on p. 94. l. 15.

We may even advance upon the same ground and assert, that the historical fact, thus determined, is not merely fatal to the claims advanced by the Ethiopians to a high antiquity; but subversive, to a demonstration, of the like pretensions, preferred by the Hindus; who are generally regarded as the source of Ethiopian civilization. It admits of little dispute, that from the Meroe, founded by Cambyses, the fables are descended, respecting mount Merou, which the Brahmins have incorporated in their sacred writings, and have identified with the earliest epoch of their history; Ezour-Veda, vol. i. ch. iii. p. 191. b. 214. c. Observ. prél. p. 166, &c. Asiat. Research. vol. viii. p. 285. sq. vol. x. p. 128. The source of these fables is clearly discernible in the *first* experiments, made under the direction of Eratosthenes, with gnomons erected from *Meroe* to Syene, which led to the *division of the earth into climates*, and the determination of the latitude by the *elevation of the pole*. In an extract, from an ancient geographer, prefixed to Macrobius, ed. var. Lond. 1694. occurs the following passage, describing the first attempt to measure a degree of the meridian; which sheds the fullest light on this subject. “Hujus investigationis
“ primus auctor Eratosthenes fertur . . . Hic itaque cùm
“ terræ ambitum æstimare disposeret, tali arte viam sibi
“ fecisse dicitur . . . Nam à mensoribus regis Ptolemæi adjutus, qui totam Ægyptum tenebat, à *Syene usque ad*
“ *Meroen* horoscopicis vasis cum æquali gnomonum dimensione dispositis,” &c. p. vii. conf. Macrob. Somn. Scip. lib. ii. cap. vii. p. 102. In the astronomy and geography of the Hindus, incontrovertible evidence exists, that it was from this source they derived their early knowledge of both sciences. The errors in their astronomical tables, the rate which they ascribe the equinoxial precession, on which their great cycles are founded, and the position which they assign

the meridian from whence they computed the longitude, place this point beyond controversion: as might be easily proved, if my present limits permitted. So far, consequently, are we from having the slightest proof, that civilization and science are remotely deducible from India, through the Ethiopians; that the evidence is, on the contrary, demonstrative, they proceeded from Egypt to Ethiopia, and thence passed into India. And if Meroe afford any ground of inference, respecting their rise, in the last named countries; it cannot be dated previously to the year B. C. 524, when that city was founded by Cambyzes: and should be probably dated long subsequently to that epoch. *Comp. Acad. des Inscr. tom. xxvi. p. 235. 771, &c. tom. xxxi. p. 118. sq. tom. xl. p. 210. sq.*

P. 342. l. 23. Bochart, *ut supr. par. ii. cap. xxiv. col. 466.* Prichard, *ut supr. p. 207.* The latter writer, however, follows Michaelis, in deducing the Phenicians from the shores of the Erythræan sea; *ibid. p. 217. b.* But the conclusion of Bochart seems more entitled to respect; by whom it is, with great probability, supposed, that the emigration of the Israelites from Egypt, and their settlement in Canaan, afforded the only ground for the event which is recorded by Herodotus and his followers and copyists. *Geogr. Sacr. par. i. cap. xxxiv. col. 301. l. 17.* The mention which the father of history has made of the Holy City, under the name Kadytis, which the Syrians termed Kadutha, and the Arabs Al Kuds, from the Kedusha of the Jews,—as it affords decisive proof, that he has, upon other occasions, confounded the Israelites with the Phenicians,—furnishes no slight presumption, that, on this also, he has committed a similar error: see *Prid. Connex. par. i. b. i. p. 45.* His silence respecting the occupation of Palestine by the Hebrews, is just as inexplicable on any other supposition; as his error is natural, when his statement is understood of that people, who, on leaving Egypt, proceeded from Sinai and the Red Sea, in their migration to Phenicia.

Ibid. l. 30. Prichard, *East. Orig. of Celt. Nat. p. 6. Phys. Hist. of Man, b. viii. p. 337. sq.*

P. 343. l. 10. Id. *ibid.* As the colonization of America, from Asia, forms one of the greatest difficulties in the natural history of man; an identity in the customs, by which the fact is established furnishes a subject of no less interest and importance, than the affinity in the language of both continents. The use of the bow and the prevalence of smoking, with the offer of the pipe as a token of peace, are familiar instances, which indicate a connexion of a recent date; a similarity in the customs, ascribed to the Scythians by Herodotus, and to the North Americans by the Romish missionaries, proves that it had existed from a remote period. Among the rites which prove a direct communication, as having no foundation in nature, may be noticed the barbarous practice of scalping and drinking the blood of the prisoners taken in war; comp. Herod. lib. iv. cap. lxiv. Mission. de l'Améric. Choix de Lettr. Edif. tom. vii. p. 49. c. 89. a. 157. b. The practice of cooking in the paunch of an animal, set over the fire, which has been numbered, from its supposed impossibility, among the fictions of Herodotus, furnishes a coincidence still more conclusive; Herod. *ibid.* cap. lxi. Mission. *ibid.* p. 65. b. To these similarities may be added the striking resemblance in the funeral rites of the ancient and modern people; Herod. *ibid.* cap. lxxii. lxxiii. Mission. *ibid.* p. 212. sq. 216.

Ibid. l. 2. Choix de Lett. Edif. tom. i. p. 25. d. tom. vii. p. 1. d.

Ibid. l. 29. *Ibid.* tom. i. p. 3. c. 47. c. Ranking, Hist. Research. ut *supr.* p. 464.

P. 344. l. 5. Prichard, Phys. Hist. ut *supr.* p. 457. b.

Ibid. l. 9. 12. Id. *ibid.* p. 434. b. 458. b. 466. b. Howison, Dict. of Malay, Pref. p. v. vi.

Ibid. l. 19. Prichard, *ibid.* p. 403. c. 456. d. sq.

Ibid. l. 25. Id. *ibid.* p. 435. a. 438. b. 448. c.

P. 345. l. 8. Id. *ibid.* p. 412. d.

Ibid. l. 13. 16. Id. *ibid.* p. 443. b. 464. d. comp. note to p. 344. l. 9.

Ibid. l. 19. Id. *ibid.* p. 436. c. 438. b. d.

P. 346. l. 21. Fodéré, ut supr. tom. iii. §. 962, 963. p. 385. c. 387. a. Prichard, ut supr. vol. i. p. 170. c.

P. 347. l. 14. Prichard, ibid. vol. i. p. 358. b. sq. vol. ii. p. 522. a. sq. 523. d.

Ibid. l. 18. Id. ibid. vol. i. p. 358. a. vol. ii. p. 205. a. 523. a. sq.

Ibid. l. 25. Id. ibid. p. 523. a.

P. 348. l. 1. Id. ibid. comp. Fodéré, vol. i. p. 67. a. 70. a. 76. a. 255. d. vol. ii. p. 138. a.

Ibid. l. 7. Id. ibid. vol. ii. p. 536. a. sq.

Ibid. l. 19. Id. ibid. p. 548. d.

P. 349. l. 18. Id. ibid. p. 596. a.

Ibid. l. 30. Voy. Choix des Lett. Edif. tom. ii. p. 173, 174.

P. 350. l. 22. Ibid. tom. viii. p. 12. “Faut-il s'étonner
 “que l'entendement de l'homme sauvage soit si rétréci, si
 “borné dans son exercice? l'avidité de son intelligence ne
 “se porte que vers les êtres sensibles; il ne connoît aucune
 “des idées que nous appelons abstraites, universelles, réflé-
 “chies; son langage, borné comme son esprit, ne sait nom-
 “mer que les objets matériels. Il n'y a pas dans la langue
 “que parlent les peuplades Américaines, de mots propres
 “pour exprimer les idées de substance, de durée, d'espace;
 “un sauvage nu, accroupé près du feu qu'il a allumé dans
 “sa chaumière, couché sous des branchages qui lui offrent
 “un abri momentané, n'a ni le désir, ni le pouvoir de com-
 “biner ses idées, de les comparer pour en extraire des juge-
 “mens raisonnés, encore moins de s'élever jusqu'à des spé-
 “culations savantes.”

P. 351. l. 13. Prichard, ut supr. vol. ii. p. 611. d.

P. 352. l. 7. Id. East. Orig. of Celt. Nat. p. 11. n.

Ibid. l. 12. Of the Indo-Chinese languages, their derivation and difference from the Indo-European, the following account is given by a learned Oriental scholar. “We thus
 “have five languages (*Ruhking, Burman, Siamese, Anam*
 “spoken in China, and Tonquin, *Tagala* spoken in the
 “Philippine islands) described as void of inflexion; lan-

“ guages which fill nearly all the countries from *China to*
 “ *the borders of Bengal*. These possess three characteristics,
 “ their being *originally monosyllabic*, nearly all intonated,
 “ and without inflexion ; which characteristics direct us to
 “ their origin. The Sungskrit and all its dialects are poly-
 “ syllabic, they are never varied by intonation, and they all
 “ possess inflexions both for nouns and verbs. This leaves
 “ us at no loss for the source of the monosyllabic languages:
 “ *they sprang from the Chinese*, however much they may
 “ have been affected by any foreign mixture, and in that
 “ language we may expect to find the origin of that simpli-
 “ city of construction, which excludes every kind of inflex-
 “ ion. From that of its descendants, therefore, the genius
 “ of the Chinese language may be easily inferred ; and the
 “ unfolding of its nature may serve in some measure as a
 “ key to the grammar and construction of those spoken by
 “ the Indo-Chinese nations in general.” Marshman, Elem.
 of Chin. Gram. p. 193. a. Quoting Dr. Leyden, he mentions
 the Ruhking, as the first of this singular class of languages,
 and as forming a connecting link between the monosyllabic
 and polysyllabic: *ibid.* p. 148. In pointing out the affinity
 between the colloquial medium of the former and the Chinese,
 he observes ; “ While this approximation is apparent in the
 “ countries nearest Bengal ; such as Bootan, Tibet, Arracan,
 “ and the Birman dominions, it seems to increase in the
 “ countries nearer to China, till the alphabetic symbols of
 “ the Sungskrit are debarred an entrance by the use of the
 “ Chinese characters, as well as their colloquial medium.
 “ These facts seem to indicate, that there was a time when
 “ all the countries west and south of China up to the very
 “ borders of Bengal, comprizing an extent of country nearly
 “ 1000 miles in length, used the Chinese colloquial medium.”
Id. ibid. p. 151.

P. 352. l. 22. *Vid.* Prichard, Phys. Hist. vol. ii. p. 320. d.

Ibid. l. 28. On the purely factitious nature of the mono-
 syllabic languages, which derives the fullest confirmation
 from the limited extent of their vocabulary, the most pro-

found Oriental scholars are generally agreed; “To the
 “ writer of this,” observes Dr. Morrison, “it appears un-
 “ *questionable*, that the Chinese language *originated in pic-*
 “ *tures* of visible objects, and from them, by allusion, gra-
 “ dually extended from things visible and capable of being
 “ associated to things immaterial and beyond the cogni-
 “ zance of the senses.” Chinese Dict. Introd. p. x. To the
 same purpose it is observed by M. Abel-Rémusat: “C’est
 “ un marque du génie particulier de la langue Chinoise, qui
 “ consiste uniquement dans l’écriture, absolument indépen-
 “ dante de la parole, et dont les caractères n’ont de pronon-
 “ ciation que celle qu’on convient de leur donner.” Essai sur
 la Langue et la Litter. Chin. p. 34.

P. 353. l. 3. The *colloquial medium* of the Chinese is
 composed of a system of literal powers adopted from the
 Sanscrit; and consists of a vocabulary of no more than 846
 monosyllables. It has been employed by the Chinese to ex-
 press the multitude of their characters, and to convey their
 ideas, for the period of their literary existence: the distinct
 monosyllables in it do not, indeed, exceed 629, which when
 varied by tone, produce 1781 intonations: Marshman, ut
 supr. p. 117. 139. It is generally admitted, that the con-
 nexion of these names with the characters, is perfectly arbi-
 trary: in which they resemble our numerical characters.
 “The sound [name] of no character,” observes Marshman,
 in Chinese “is inherent therein; it may be totally changed
 “ without affecting the meaning of the character. Thus to
 “ *yin*, a man, might be affixed *tao* or *lee*, or any other name,
 “ and the character would still convey the same idea, be-
 “ cause the written language speaks wholly to the eye.”
 Ibid. p. 81. So wholly are they unallied, that it is possible
 to convey, by means of the character alone, as in the case of
 our numerals, the ideas of which they are significant, though
 the names assigned them are altogether unknown. Thus
 two persons, whom a difference of dialect renders unin-
 telligible to each other, are enabled to communicate their
 ideas in dumb show: “l’un des interlocuteurs trace rapide-

“ ment en l'air les caractères avec le doigt, et l'autre, suivant
 “ ces traits fugitifs, lit si parfaitement qu'au but d'une demi-
 “ heure il serait en état d'écrire sur le papier tout ce qui
 “ vient d'être écrit et lu dans le vague de l'air.” Abel-Rémusat, *ut supr.* p. 33.

P. 353. l. 19. The employment of the Chinese, as a medium of universal communication, is generally acknowledged by Oriental scholars; “To convey ideas to the mind,” observes Dr. Morrison, “by the eye, the Chinese language answers all the purposes of a written medium, as well as the alphabetic system of the west, and perhaps in some respects better. As sight is quicker than hearing, so ideas reaching the mind by the eye are quicker, more striking and vivid, than those which reach the mind by the slower progress of sound. The character forms a picture which really is, or by early associations is considered, beautiful and impressive Perhaps the Chinese written language has contributed in some degree to the unity of the Chinese nation. Were all the dialects of the empire expressed in an alphabetic character, they would form, to appearance, languages perhaps nearly as different from each other, as those of the several nations of Europe. Is it not then an advantage to have, distinct from the spoken language, a written medium of thought, little susceptible of change?” *Chin. Dict. Introd.* p. xi. Speaking of the want of connexion between the symbol and its name, M. Abel-Rémusat observes, “De là vient aussi qu'on peut lire couramment les auteurs sans en prononcer un seul mot. Cela est vrai que les habitants du royaume de Wō (Japon), de Kiāo-tchi (Tonquin), de Tchân-tchîng (Cochin-Chine), et des îles Lieôu-kieôu, dont les langues diffèrent toutes beaucoup de celle des Chinois, se servent pourtant des mêmes caractères qu'eux, mais en les prononçant chacun à sa manière; de sorte que quoiqu'ils ne se comprennent pas en parlant, ils peuvent cependant converser par écrit, et lire les mêmes livres.” *Essai, ut supr.* p. 35.

P. 353. l. 29. Abel-Rémusat, *Récherch. sur les Lang.*

Tartar. Disc. Prél. p. xxii. et n. “On dit qu’on trouve en-
 “core à présent dans *le Copte* des vestiges de *l’emploi des*
 “*hiéroglyphes*.” In a note it is added, “Cette curieuse ob-
 “servation, et la première indication de la théorie sur la-
 “quelle elle repose, se trouvent dans une notice des Re-
 “cherches de M. Et. Quatremère, faite par M. de Sacy,
 “Encycl. ann. 1808.”

P. 354. l. 7. See Marshm. ut supr. p. 89. sq.

Ibid. l. 13. 17. Des Guign. Acad. des Inscript. tom. xxviii.
 p. xxix. c. sq.

P. 355. l. 29. I. Klaproth, Asia Polyglotta.

P. 356. l. 4. Id. ibid. p. 17. c.

Ibid. l. 11. The notion of four successive deluges is maintained by the last cited author; who not only asserts the truth of each, but affects to determine the epoch of its occurrence. Having assigned the precedence to that which occurred under Noah, he takes the date of it as computed by the Samaritan chronology B. C. 3044; as determined by the Kali-jug of the Hindoos B. C. 3101; and as fixed in the Chinese annals B. C. 3082: and then adding these different dates together, divides the sum by three, and so places the date of the Deluge B. C. 3076; just 728 years before the proper epoch, according to the best digested systems of the sacred chronology. To the second inundation, which he terms the Chinese, and supposes to have occurred under Xisuthrus, he assigns the date B. C. 2297, which differs but half a century from the true epoch of the Deluge. To these he adds a third, which, as occurring under Ogyges, may be termed the Grecian, B. C. 1796; and a fourth, or Thessalian, under Deucalion, which occurred B. C. 1521, according to the Parian Chronicle, vid. Klaproth, ut supr. p. 29.

It is unnecessary to enter into any length of proof, that the principles on which these dates are determined, are arbitrary and erroneous; and that, as referring to an event of such remote antiquity, and resting merely on fluctuating traditions, they may be with equal probability referred to the same as to different epochs. That they merely allude

to one great event, the striking similarity of the circumstances, under which the incident which they respectively describe is declared to have occurred, places beyond reasonable controversion. The single incident of the dove liberated from the ark, of which they generally preserve the tradition, will illustrate and establish the assumption: see Gale, Court of Gent. b. iii. ch. vi. p. 73. d. Bochart, Hieroz. Præf. p. 41. a. 36. a. I have already had occasion to observe, that the remarkable day of the entering into the ark was preserved among the Hebrews, Egyptians, and Chaldees; see note on p. 28. l. 27. p. 331. l. 11. They equally agree in representing nine months, as the period during which the waters remained on the earth; see Gen. viii. 5. Solin. Polyhist. cap. xi. p. 30. c. cf. Apollon. Rhod. lib. iii. It is perfectly absurd to suppose, that these circumstances could have concurred, in incidents which happened at different periods.

It is not less unreasonable to lay any stress upon the notion of several deluges, maintained by the Egyptians and Hindoos, or of different floods maintained by the Greeks under Ogyges and Deucalion. In the doctrine of successive deluges, it was not only maintained, that they had already occurred, but that they would again occur, in the same manner in which they had previously happened; vid. Burnet, Archæol. cap. iii. p. 21. 22. cap. vii. p. 90. To the same purpose, and in allusion to the great restitution effected in these revolutions it was observed,

Occidet et serpens, et fallax herba veneni

Occidet: Assyrium vulgò nascetur amomum:—

Alter erit tum Tiphys, et altera quæ vehat Argo

Delectos heroas &c.———

It must be therefore palpable, that if they are received, as attestations of matter of fact; they must be understood as relating to the same incident, which was supposed to recur at different periods. The cause of the difference in time, by which they were alone distinguishable, is to be sought in the cycles, by which the epoch of each change was computed,

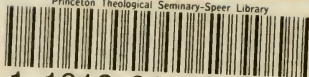
or supposed to be effected, in the process of nature; and not in the incidents themselves, which related to the same event repeated at distant intervals.

In the traditions preserved among the most ancient nations, of this great catastrophe, however misrepresented by mythological fiction, or perverted by a spurious philosophy, we have but the record of the one event, which, as I have already intimated, occurred B. C. 2348. A. M. 1656. To establish this date, an argument has been adduced from astronomy; in the truth of which, one of the most rigid of the censors, by whom the hypothesis wherein it is included has been reviewed, seems disposed to acquiesce; see Whiston, *New Theor.* p. 201. 439. VI. *Dissert.* p. 214. It must be, however, acknowledged, that the elements on which this demonstration is constructed are mere misrepresentations; the assumption, that the earth was at the time in its perihelion, being no more founded in fact, than the notion that its orbit was originally circular; on both of which assumptions the hypothesis is constructed.

THE END.



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